Staff Report

for the Board of Directors' Meeting of April 14, 2021

TO: Board of Directors

FROM: Greg Jones, Interim General Manager
Doug Roderick, P.E., Interim Engineering Manager

DATE: April 6, 2021

SUBJECT: **Agricultural Water Management Plan (FATR #1034)**

ENGINEERING

RECOMMENDATION:
Adopt Resolution No. 2021-08 - Adopting, Filing and Implementing the Nevada Irrigation District Agricultural Water Management Plan Update.

BACKGROUND:

The Board of Directors held a public hearing on March 24, 2021 regarding the Agricultural Water Management Plan Update (AWMP). The District received written comments from 23 members of the public in addition to comments given during both workshops and the public hearing. After closing the public hearing, the Board chose not to adopt Resolution No. 2021-08, and directed staff to make additional changes to both the AWMP and the Resolution. Additionally, the Board directed staff to respond to the written comments received.

Staff has made changes to the AWMP, and included both the red-line version and the final version of the AWMP in the board packet. Staff has responded to the written comments, and both the written comments and responses are in Appendix A of the AWMP.

Additionally, changes to Resolution No 2021-08 have been made per requests from the Board.

Pending any significant comments/changes from the Board, staff is recommending the approval of the 2020 AWMP update.

BUDGETARY IMPACT:
None

Attachments: (4)

- Resolution No. 2021-08 – Red-lined
- Resolution No. 2021-08 – clean draft
- Draft Final AWMP Red-lined (without Appendices B through G)
- Draft Final AWMP

RESOLUTION NO. 2021-08

OF THE BOARD OF DIRECTORS OF THE NEVADA IRRIGATION DISTRICT

ADOPTING, FILING AND IMPLEMENTING
THE AGRICULTURAL WATER MANAGEMENT PLAN UPDATE

WHEREAS, the California Legislature enacted SBX 7-7, the Conservation Act of 2009 (Water Code Section 10820 et sequences), known as the Agricultural Water Management Planning Act which mandates that every agricultural water supplier providing water for more than 10,000 irrigated acres prepare an Agricultural Water Management Plan (AWMP); and

WHEREAS, the Nevada Irrigation District (District) is supplying water to more than 10,000 irrigated acres; and

WHEREAS, the California Water Code Section 10820(a)(2)(A) requires the Plan to be adopted by April 1, 2021, after public review and hearing, and filed with the California Department of Water Resources within 30 days of adoption; and

WHEREAS, the District properly noticed the public hearing regarding said AWMP and was held by the District Board of Directors on March 24, 2021; and

WHEREAS, at the March 24, 2021 Board meeting, the Board of Directors unanimously approved to move the item for final adoption in early April 2021 to ensure it is submitted to the State by April 30, 2021; and

WHEREAS, the District did prepare and shall file said AWMP with the California Department of Water Resources by April 30, 2021.

WHEREAS, Water Code Section 10608.48(d) requires an estimate of water use efficiency improvements estimated to occur in a five to ten year future timeframe as cost effective or technically feasible.

NOW, THEREFORE, BE IT RESOLVED by the Board of Directors of the Nevada Irrigation District as follows:

(1) The District is committed to developing a plan for the implementation of water efficiency improvements to be implemented in the next five to ten years with specific metrics;

(2) The District will review, and amend as appropriate, supply and demand assumptions to better understand available water supply and corresponding demands;

(~~1~~3) The 2020 Agricultural Water Management Plan is hereby adopted and ordered filed with the District;

(~~2~~4) The Secretary of the Board of Directors is hereby authorized and directed to file the AWMP with the California Department of Water Resources within 30 days after this date;

(~~3~~5) The Interim General Manager is hereby authorized and directed to implement the Agricultural Water Management Plan which includes elements of water use efficiency;

(~~4~~6) The Interim General Manager shall recommend to the Board of Directors additional procedures, rules and regulations to carry out effective and equitable allocation of water resources.

* * * * *

PASSED AND ADOPTED by the Board of Directors of the Nevada Irrigation District at a regular meeting held on the 14th day of April, 2021, by the following vote:

AYES:	Directors:
NOES:	Directors:
ABSENT:	Directors:
ABSTAINS:	Directors:

_____
President of the Board of Directors

Attest:

_____
Secretary to the Board of Directors

RESOLUTION NO. 2021-08

OF THE BOARD OF DIRECTORS OF THE NEVADA IRRIGATION DISTRICT

ADOPTING, FILING AND IMPLEMENTING
THE AGRICULTURAL WATER MANAGEMENT PLAN UPDATE

WHEREAS, the California Legislature enacted SBX 7-7, the Conservation Act of 2009 (Water Code Section 10820 et sequences), known as the Agricultural Water Management Planning Act which mandates that every agricultural water supplier providing water for more than 10,000 irrigated acres prepare an Agricultural Water Management Plan (AWMP); and

WHEREAS, the Nevada Irrigation District (District) is supplying water to more than 10,000 irrigated acres; and

WHEREAS, the California Water Code Section 10820(a)(2)(A) requires the Plan to be adopted by April 1, 2021, after public review and hearing, and filed with the California Department of Water Resources within 30 days of adoption; and

WHEREAS, the District properly noticed the public hearing regarding said AWMP and was held by the District Board of Directors on March 24, 2021; and

WHEREAS, at the March 24, 2021 Board meeting, the Board of Directors unanimously approved to move the item for final adoption in early April 2021 to ensure it is submitted to the State by April 30, 2021; and

WHEREAS, the District did prepare and shall file said AWMP with the California Department of Water Resources by April 30, 2021.

WHEREAS, Water Code Section 10608.48(d) requires an estimate of water use efficiency improvements estimated to occur in a five to ten year future timeframe as cost effective or technically feasible.

NOW, THEREFORE, BE IT RESOLVED by the Board of Directors of the Nevada Irrigation District as follows:

(1) The District is committed to developing a plan for the implementation of water efficiency improvements to be implemented in the next five to ten years with specific metrics;

(2) The District will review, and amend as appropriate, supply and demand assumptions to better understand available water supply and corresponding demands;

(3) The 2020 Agricultural Water Management Plan is hereby adopted and ordered filed with the District;

(4) The Secretary of the Board of Directors is hereby authorized and directed to file the AWMP with the California Department of Water Resources within 30 days after this date;

(5) The Interim General Manager is hereby authorized and directed to implement the Agricultural Water Management Plan which includes elements of water use efficiency;

(6) The Interim General Manager shall recommend to the Board of Directors additional procedures, rules and regulations to carry out effective and equitable allocation of water resources.

*** * * * ***

PASSED AND ADOPTED by the Board of Directors of the Nevada Irrigation District at a regular meeting held on the 14th day of April, 2021, by the following vote:

AYES:	Directors:
NOES:	Directors:
ABSENT:	Directors:
ABSTAINS:	Directors:

_____
President of the Board of Directors

Attest:

_____
Secretary to the Board of Directors

Nevada Irrigation District

Agricultural Water Management Plan

~~Public Hearing~~ Draft Final
~~March 24~~April 14, 2021

Nevada Irrigation District

Agricultural Water Management Plan

~~Public Hearing~~ Draft Final
~~March 24~~April 14, 2021

Jim Crowley
Ca PE 52181
Insert stamp for final

ZANJERO

Draft AWMP Table of Contents

List of Acronyms and Abbreviations

Act	Agricultural Water Management Planning Act
AF	Acre-feet
AFY	Acre-feet per year
AW	Applied Water
AWMP	Agricultural Water Management Plan
BMP	Best Management Practice
CABY	Cosumnes, American, Bear, Yuba Integrated Regional Water Management Group
CCU	Crop Consumptive Use
CDFW	California Department of Fish and Wildlife
CIMIS	California Irrigation Management Information System
CWC	California Water Code
~~DEM~~DEW	Drier, extreme warming scenario
District	Nevada Irrigation District
DWR	California Department of Water Resources
EP	Effective Precipitation
EQIP	Environmental Quality Incentives Program
ET	Evapotranspiration
ETo	Reference Evapotranspiration
ETAW	Evapotranspiration of Applied Water
EWMP	Efficient Water Management Practices
FAO	Food and Agriculture Organization
FERC	Federal Energy Regulatory Commission
°F	Degrees Fahrenheit
ft	Feet/Foot
GCM	Global Climate Models
GIS	Geographical Information System
hp	Horsepower
MI	Miner's Inch
ml	Milliliter
MPN	Most Probable Number
M&I	Municipal and Industrial
N/A	Not Applicable
NID	Nevada Irrigation District
NRCS	Natural Resource Conservation Service
PCWA	Placer County Water Agency
PFW	Plan for Water
PG&E	Pacific Gas and Electric
PNSSNS	Placer/Nevada/South Sutter/North Sacramento
RCD	Resource Conservation District
SVI	Sacramento Valley Index
SVWQC	Sacramento Valley Water Quality Coalition
SWP	State Water Project
SWRCB	California State Water Resource Control Board

TOC	Total Organic Carbon	WHO	Water and Hydroelectric Operations
UC	University of California		
USBR	United States Bureau of Reclamation	WMW	Wetter, moderate warming scenario
USDA	United States Department of Agriculture	WRCC	Western Regional Climate Center
		WTP	Water Treatment Plant
USGS	United States Geological Survey	WWTP	Wastewater Treatment Plant

1 Agricultural Water Management Plan Introduction and Overview

This AWMP is the year 2020 AWMP as required by the Agricultural Water Management Planning Act (Act), pursuant to California Water Code (CWC) Section 10820(a). The Act requires all agricultural water suppliers that provide water to 10,000 or more irrigated acres within their service area to prepare an Agricultural Water Management Plan (AWMP or Plan). This AWMP was prepared under direction of the Nevada Irrigation District (District) staff.

This AWMP addresses the District's water system and includes a description of the service area, water uses, water resources, and a comparison of water supply and water demands during the planning cycle (2016 through 2020). Also described are the District's water supply reliability, water use efficiency information, and drought plan. The Plan presents NID's past data and current operations, rules, and regulations as provided to develop the document.

The organization of this 2020 update generally follows the outline presented in the DRAFT DWR 2020 AWMP Guidebook. The final guidebook has not yet been released. This 2020 update solely addresses the legislative requirements. Relevant sections of the CWC are presented in italics throughout the plan to provide context to the respective section.

1.1 Agricultural Water Management Planning Act

10608.12(a) "Agricultural water supplier" means a water supplier, either publicly or privately owned, providing water to 10,000 or more irrigated acres, excluding recycled water.

10820(a)(2)(A). The agricultural water management plan shall be updated on or before April 1, 2021, and thereafter on or before April 1 in the years ending in six and one.

NID is defined as an agricultural supplier per CWC Section 10608.12(a), and therefore, is required to update the AWMP per CWC Section 10820(a)(2)(A). The Act describes the contents of the AWMP as well as how agricultural water suppliers should adopt and implement the AWMP. The current version of the Act requires an AWMP to include:

- Description of agricultural water supplier and service area.
- Information on quantity of water uses.
- Description of quantity and quality of water supplies.
- Analysis of water supply reliability.
- Annual water budget based on quantification of all inflow and outflow components for the service area.
- Identification of water management objectives aimed at improving system efficiency or to meet other water management objectives.
- Quantification of water use efficiency using the methods(s) presented in DWR's 2012 Report to the Legislature, "A Proposed Methodology for Quantifying the Efficiency of Agriculture Water Use." The quantification for the efficiency of agriculture water use must account for all water uses, including crop water, agronomic, environmental, and recoverable surface flows.
- Inclusion of a Drought Plan for periods of limited water supplies available to the supplier. The Drought Plan describes actions for resilience and response planning.

In addition to the general requirements above, the Act includes submittal requirements:

- AWMP is to be adopted on/before April 1, 2021 (and every five years following).
- AWMP must be submitted electronically to DWR.

1.2 Description of Previous Water Management Activities

10826(e). Describe previous water management activities.

The District maintains an active and ongoing water resources planning program. Policy and strategic efforts are set by the Board of Directors through the Board's Strategic Plan, specific resolutions, and directions to staff. Previous planning efforts included AWMPs, Urban Water Management Plans, Integrated Regional Water Resource Management Plans through the Cosumnes/American/Bear/Yuba (CABY) group, Federal Energy Regulatory Commission license, and the Raw Water Master Plan. The most recent Board of Directors' District Goals identified the importance of developing and managing the District's resources in a self-determining manner to protect and provide local control of the water supply. The District is implementing this goal through the Plan for Water Program. Plan for Water (PFW) is an overarching effort to evaluate all the District's natural resources, the community's need for the resources, and developing strategies to match resources with the needs. PFW is an ongoing process that will continually evaluate data and trends to update and refine the water resource management strategies into the future.

1.3 Coordination Activities

The following subsections describe the District's actions to comply with the coordination requirements, including notification and public participation.

1.3.1 Notification of AWMP Preparation

10821(a). An agricultural water supplier required to prepare a plan pursuant to this part shall notify each city or county within which the supplier provides water supplies that the agricultural water supplier will be preparing the plan or reviewing the plan and considering amendments or changes to the plan. The agricultural water supplier may consult with, and obtain comments from, each city or county that receives notice pursuant to this subdivision.

The District notified cities and counties within the service area that this AWMP was being updated. The notification was mailed December 11, 2020 to the cities and counties as well as other stakeholders as listed in Appendix A. Table 1-1 provides a summary of the AWMP coordination.

Table 1-1. (DWR Worksheet 1) Summary of Coordination, Adoption, and Submittal Activities. - (not final until Board approved and submitted to State)

Potential interested parties	Notified of AWMP preparation	Requested copy of draft	Commented on the draft/action taken by supplier	Notified of public hearing	Attended public hearing	Copy of AWMP sent (date sent)
Nevada County	X					
Placer County	X					
Yuba County	X					
City of Grass Valley	X					
City of Nevada City	X					
City of Lincoln	X					
Yuba Water Agency	X					
Placer County Water Agency	X					
Placer County Agricultural Commissioner	X					
Placer County Farm Bureau	X					
Nevada County Agricultural Commissioner	X					
Nevada County Farm Bureau	X					
General public	X					
District Website	12/11/2020	--	--	--	--	--

1.3.2 Public Participation

10841. Prior to adopting a plan, the agricultural water supplier shall make the proposed plan available for public inspection, and shall hold a public hearing on the plan. Prior to the hearing, notice of the time and place of hearing shall be published within the jurisdiction of the publicly owned agricultural water supplier pursuant to Section 6066 of the Government Code.

NID conducted public outreach through a variety of efforts. A news release as well as a website posting were released on and around December 11, 2020 announcing the District's efforts to update the AWMP and the Urban Water Management Plan. A Board workshop was held on March 10, 2021 and March 18, 2021 to review the AWMP requirements and present the District's approach to the draft plan. The Board workshops were publicized per normal Board of Directors meeting notification.

A public hearing was conducted on March 24, 2021~~*insert date*~~ to present the Draft Plan and receive public input. The Draft Plan was provided to the public through the District's website for download ~~XX~~ seven days prior to the public hearing with reference to its location provided in public hearing notice. The public hearing was noticed in the Auburn Journal and Lincoln News Messenger ~~by *insert description*~~, pursuant to Section 6066 of the Government Code.

The District received public comment at each meeting as well as submitted comments as included in Appendix A. The District updated and edited the draft Plan per corrections and clarifications. ~~*Insert text describing results from Board Workshop, public hearing, and Board action*~~.

A copy of the published Notice of Public Hearing is included in Appendix A. The public review comments received are also provided in Appendix A.

1.4 AWMP Adoption, Submittal and Availability

10841. After the [public] hearing, the plan shall be adopted as prepared or as modified during or after the hearing.

10820(a)(2)(B). An agricultural water supplier shall submit its plan to the department no later than 30 days after the adoption of the plan. The plan shall be submitted electronically and shall include any standardized forms, tables, or displays specified by the department.

10843(a). An agricultural water supplier shall submit to the entities identified in subdivision (b) a copy of its plan no later than 30 days after review of the plan pursuant to subdivision (b) of Section 10820.
(b) An agricultural water supplier shall submit a copy of its plan to each of the following entities:
(1) The department.
(2) Any city, county, or city and county within which the agricultural water supplier provides water supplies.
(3) Any groundwater management entity within which jurisdiction the agricultural water supplier extracts or provides water supplies.
(4) The California State Library.

10844(a). Not later than 30 days after the date of adopting its plan, the agricultural water supplier shall make the plan available for public review on the agricultural water supplier's Internet Web site.

This 2020 AWMP was adopted by resolution of the District's Board of Directors on DATE. A copy of Board Resolution No. XXX is included in Appendix B.

The District submitted this AWMP electronically to DWR for review on DATE, The DWR Plan review checklist is presented in Appendix C.

The District has made this adopted AWMP publicly available at the following locations (within 30 days after adoption);

- District Administration building
- District website (www.nidwater.com)

1.5 AWMP Implementation Schedule

10842. An agricultural water supplier shall implement the plan adopted pursuant to this chapter in accordance with the schedule set forth in its plan, as determined by the governing body of the agricultural water supplier.

The District will utilize the findings in this AWMP to inform its ongoing water management programs, as well as help inform the Plan for Water process. The District will continue to implement the efficient water management programs, water measurement practices, and water supply management practices described in this AWMP.

2 Description of Service Area

10826(a). Describe the agricultural water supplier and the service area, including all of the following:
(1) Size of the service area
(2) Location of the service area and its water management facilities
(3) Terrain and soils
(4) Climate
(5) Operating rules and regulations
(6) Water delivery measurements or calculations
(7) Water rate schedules and billing
(8) Water shortage allocation policies

The District was organized in 1921 under the California Irrigation District Act of 1897 as a nonprofit water agency, and operates under Division 11 of the State Water Code. NID is governed by a five-member Board who are elected by qualified District voters. Each Board member, representing a division with the District, serves a four-year term.

In addition to agriculture water deliveries (raw water), NID supplies treated water for municipal, domestic, and industrial purposes. Many parcels within the District service area are supplied by private wells and are not currently receiving District-supplied water.

The District also owns and operates hydroelectric generation and recreational facilities. The hydroelectric facilities have a capacity of 82.2 megawatts and produce approximately 375 million kilowatt hours per year. NID began producing power in 1966 with the completion of the Yuba-Bear Power Project, which includes Chicago Park, Dutch Flat, Bowman, and Rollins powerhouses. Recreational facilities owned by the District provide camping, fishing, and boating at Rollins Lake, Scotts Flat Reservoir, and Jackson Meadows – Bowman Lake areas.

Table 2-1 summarized the District's history and size, which is further detailed below. Service area gross acreage is determined through GIS mapping. Irrigated area acreage is determined from the annual customer self-reported surveys used to develop the crop reports.

Table 2-1. (DWR Worksheet 2) District History and Size

Date of Formation	August 15, 1921
Source of Water	
Local Surface Water	X
Local Groundwater	
Wholesaler	X (PG&E)
USBR	
SWP	
Service Area Gross Acreage[1]	287,000
Service Area Irrigated Acreage[2]	32,323

[1]Gross Acreage represents 2020 total area within service area boundary
[2]Irrigated Acreage from 2020 Crop Report

2.1 Physical Characteristics

Located on the western slope of the Sierra Nevada mountain range, the District encompasses 287,000 acres and covers portions of three counties: Nevada, Placer, and Yuba as shown on Figure 2-1. The

District's watershed is located on the upper reaches of the Yuba River, Bear River, and Deer Creek. The highest peak in the District is at 8,373 foot elevation at English Mountain. Ground elevations within the District's service area range from approximately 3,900 feet (ft) on Banner Mountain above Nevada City at the eastern edge of the District, down to about 200 ft near the City of Lincoln. The District transports raw water from high elevation mountain reservoirs to the lower elevation foothills and into portions of the northern Sacramento valley near the City of Lincoln. The District provides raw water to agricultural customers and some other municipal providers, and treated water to its own customers and some other municipal providers.

There have been no changes to the service area boundaries since the 2015 AWMP. The District considers service area expansion requests on a case-by-case basis. The District also receives new service request from parcels within its service area. Over the past five years, the District averaged approximately 20 new agricultural customers per year. Table 2-2 summarizes the expected changes to service area.

Table 2-2. (DWR Worksheet 3) Expected Changes to Service Area

Change to Service Area	Estimate of Magnitude	Effect on the Water Supplier
Reduced Service Area Size	0	None
Increased Service Area Size	0	None
New Governmental Entity	--	None
New Ag Customers Within Service Area~~New Ag Customers Within Service Area (2014-2020 average)~~	Since 2014, average of 20 new customers/ year, future connection projections will be addressed in Plan for Water.~~20 new customers/year~~	Increased irrigated acreage, increased demand that must be met with District's supplies.

NID's water management facilities include storage, treatment, and conveyance facilities. The District operates and maintains nine reservoirs with a combined storage total of 280,085 acre-feet (AF). Capacities of the reservoirs are shown in Table 2-3. The two major distribution and storage systems within the District are the Deer Creek System and the Bear River System. These systems are a mixture of canals, siphons, pipelines, and other water conveyance structures. The locations of the reservoirs are shown on Figure 2-1. Table 2-4 presents a summary of conveyance and delivery infrastructure.

The system is supplied by diverting water per NID's surface water rights into the canals at either reservoirs or at other diversion facilities located on the streams. Typical canal operations divert enough flow to allow the purchased deliveries to each customer on the canal. To maintain proper flow rates through customer delivery points, the water surface in the canal is maintained at certain levels, as is typical for miner's inch delivery systems. However, this also results in water exiting the canal at the downstream terminus. Many of these spills are then captured again at the next downstream diversion point for another canal.

Table 2-3. (DWR Worksheet 5) Water Supplier Reservoirs

Reservoir	Capacity, AF
Jackson Meadows	69,205
Bowman	68,510
Jackson Lake	1,330
Sawmill	3,030
Faucherie	3,980
French	13,940
Rollins	65,988
Scotts Flat	48,547
Combie	5,555
Total Capacity	280,085

Source: NID website – accessed December 12, 2020

Table 2-4. (DWR Worksheet 4) Water Conveyance and Delivery System

System Used	Number of Miles
Canal	340
Flume	9
Penstock	1
Other/Creek	35
Siphon/Pipe	91
Tunnel	8

Source: NID GIS

The District does not have a formal tailwater recovery system with respect to capture of on-farm and field runoff. This District is in the process of installing spill measurement on some of its canals and will install more pending available funding. This District is not aware of any grower operated tailwater systems. Tailwater status is summarized in Table 2-5

Table 2-5. (DWR Worksheet 5) Tailwater/Spill Recovery System

System	Yes/No
District Operated tailwater/spill recovery	No
Grower Operated tailwater/spill recovery	No

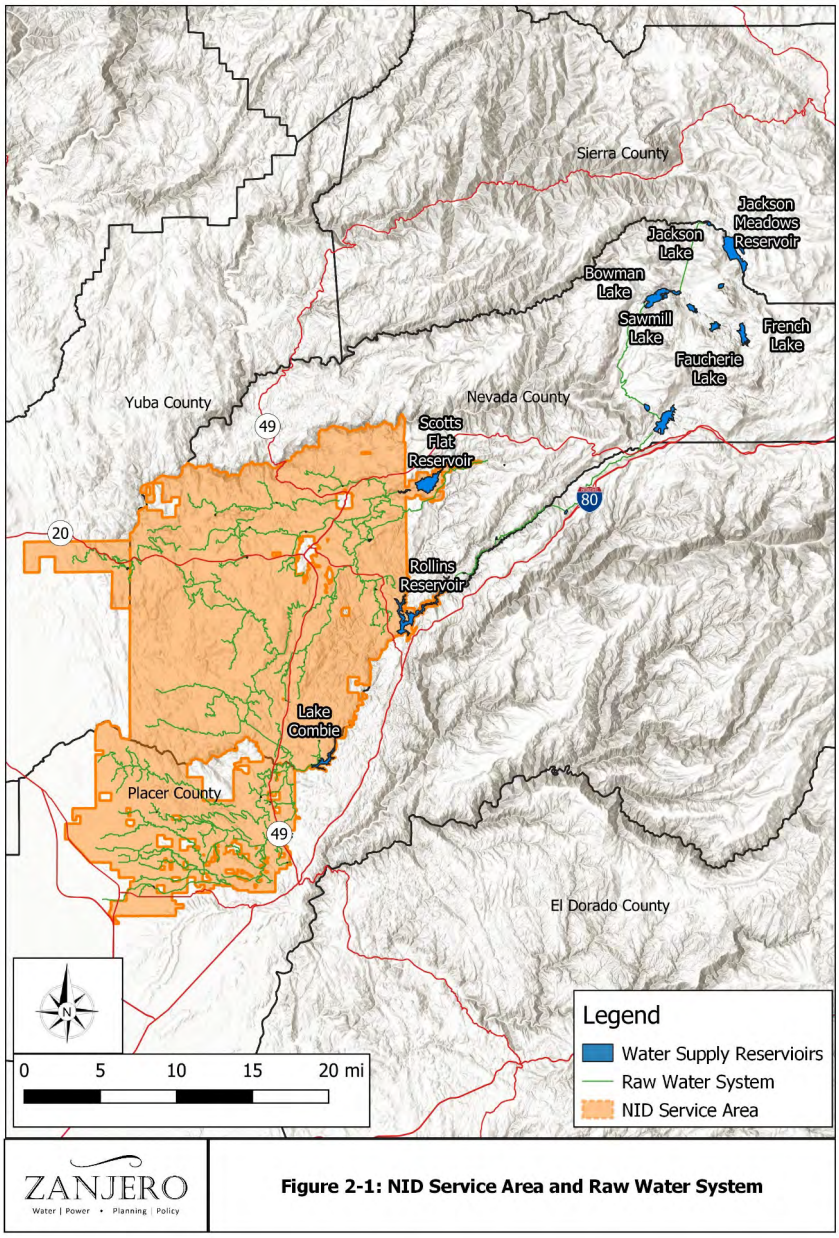


Figure 2-1: NID Service Area and Raw Water System

2.1.1 Terrain and Soils

The service area covers the Sierra Nevada foothills, which is very different than agricultural areas in the Sacramento and San Joaquin Valleys. The service area topography contains many sloped areas with rock outcroppings, as well as less sloped areas better suited for pasture, orchards, and row crops. The foothill area contains numerous fractured rock systems that allow for private wells, but also complicate the ability to understand and quantify percolation and subsurface systems. Soil types, infiltration rates, and water holding capacities vary widely from a clay dominant soil type to a sandy, alluvial soil type in valley areas. Assumptions regarding percolation and other soil parameters are further discussed in Section 5 – Water Budget. A summary of the soil types within the District service area is provided in Table 2-6.

Table 2-6. (DWR Worksheet 7) Landscape Characteristics

Topography Characteristic (slope percent)	% of the District
<5	19%
5 to 10	15%
10 to 20	27%
20 to 40	33%
40 to 60	4%
>60	1%
Unknown	1%
Soil Characteristic/Classification	**% of the District**
Complex	21%
Gravelly Loam	5%
Loam	16%
Outcrop Complex	6%
Rock Outcrop Complex	16%
Sandy Loam	12%

Source: NID 2015 AWMP based on the Soil Survey Geographic Database (SSURGO) provided by the National Cooperative Soil Survey.

2.1.2 Climate

Summers are generally dry with mild to hot temperatures. Winters are relatively wet, especially in the upper elevations around Nevada City and Grass Valley, with snow levels usually around 3,500 ft and occasionally as low as 1,000 ft. Based on the historical data obtained from the California Irrigation Management Information System (CIMIS) and the Western Regional Climate Center (WRCC), the District's service area's average minimum and maximum monthly temperatures range from 26.4 to 92.5 degrees Fahrenheit. Table 2-7 summarizes the District's climate conditions in representative areas based on the CIMIS and WRCC databases of monthly averages of historic information.

Table 2-7. (DWR Worksheet 9) District Service Area Climate Characteristics

Location	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual	Wet season (Nov-Mar)	Dry season (Apr-Oct)
Auburn (CIMIS Station No.195, WRCC Station No. 040383), 935' elev.															
Avg. ETo[1], in	1.13	1.83	3.05	4.62	6.23	7.46	8.28	7.57	5.66	3.77	1.78	1.02	52.42	8.81	39.62
Avg. max temp[2], °F	54.0	58.3	62.0	68.3	76.2	85.3	92.5	91.5	86.2	76.6	63.2	54.9	72.4	58.5	83.3
Avg. min temp[2], °F	36.6	39.3	41.4	44.8	50.3	56.5	61.8	61.0	57.3	50.7	42.9	36.8	48.3	39.4	55.28
Avg. rainfall[2], in	6.71	5.96	5.35	2.70	1.26	0.38	0.05	0.07	0.42	1.78	4.01	5.71	34.39	27.7	4.88
Avg. snowfall[2], in	0.4	0.2	0.2	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.3	1.3	1.2	0.2
Grass Valley No. 2 (WRCC Station No. 043573)[3], 2,400' elev.															
Avg. ETo, in	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Avg. max temp, °F	53.5	55.2	37.5	62.1	71.0	79.5	87.4	87.1	82.2	72.1	59.6	53.1	68.3	51.8	78.2
Avg min temp, °F	32.0	33.6	36.0	38.8	45.4	51.3	56.2	55.0	50.5	42.9	36.2	31.7	42.5	33.9	49.5
Avg rainfall, in	9.69	8.56	8.32	4.02	1.97	0.68	0.12	0.21	0.79	2.70	6.73	9.46	53.26	42.8	7.8
Avg snowfall, in	2.2	2.5	2.4	0.8	0.0	0.0	0.0	0.0	0.0	0.0	0.3	1.9	10.0	9.3	0.8
Nevada City (WRCC Station No. 046136)[4], 2,780' elev.															
Avg. ETo, in	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Avg. max temp, °F	50.7	53.3	56.7	63.2	71.0	79.8	88.4	87.4	81.5	71.0	58.7	51.4	67.7	54.2	78.6
Avg. min temp, °F	30.4	31.7	33.7	36.8	42.5	48.2	52.7	51.4	47.0	41.1	34.7	30.9	40.1	32.3	46.4
Avg. rainfall, in	10.22	9.29	8.20	4.34	2.21	0.65	0.05	0.14	0.76	2.86	6.22	9.37	54.31	43.3	8.15
Avg. snowfall, in	7.9	5.9	5.7	0.9	0.2	0.0	0.0	0.0	0.0	0.0	0.7	3.6	24.8	23.8	1.1

Table 2-7. (DWR Worksheet 9) District Service Area Climate Characteristics, continued

Location	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual	Wet season (Nov-Mar)	Dry season (Apr-Oct)
Bowman Dam (WRCC Station No. 041018)[5], 5,390' elev.															
Avg. ETo, in	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Avg. max temp, °F	45.0	46.1	49.5	55.2	63.7	72.1	80.0	79.8	73.8	64.1	52.8	46.1	60.7	47.9	70.8
Avg. min temp, °F	26.4	26.6	28.6	32.5	39.2	46.7	53.4	53.2	48.4	41.2	33.4	33.4	38.2	29.7	45.6
Avg. rainfall, in	11.74	10.06	9.09	4.56	3.49	1.24	0.20	0.40	0.90	4.14	8.14	10.83	64.78	49.9	10.8
Avg. snowfall, in	53.1	49.8	48.1	21.2	7.0	0.3	0.0	0.0	0.3	2.6	19.6	39.9	242.0	210.5	28.8

N/A = not available

[1]Period of record is 1/1/2005 through 12/31/2020.

[2]Period of record is 1/1/1905 through 6/10/2016.

[3]Period of record is 10/1/1966 through 6/10/2016.

[4]Period of record is 2/1/1893 through 6/10/2016.

[5]Period of record is 6/1/1896 through 5/31/2016.

2.2 Operational Characteristics

This subsection describes the operating rules and regulations for water delivery and billing, and allocation policies during water shortages.

2.2.1 Operating Rules and Regulations

The Board establishes and adopts the policies of the District and the Water Service Regulations. The Water Service Regulations provide for the equitable distribution and use of water within the service area. The Board reviews and makes revisions or amendments to the regulations as necessary. The most recent version of the District's Water Service Regulations (dated September 18, 2020) is included as Appendix D.

Water customers receive raw water through a variety of delivery systems and periods, as summarized in Table 2-8. The majority of raw water use is irrigation season (April 15-October 14). Fall and Winter use is available for purchase as available and often corresponds with dry Fall and Winter periods. NID provides a small percentage of raw water as wholesale water to other municipal water agencies. At times as available and as needed, NID will also provide raw water to other local or regional water providers on a case-by-case basis. The District also provides raw water intermittently through the other minor delivery methods as identified in Table 2-8.

The District sells agricultural and raw water based on flow and volume basis, depending on customer type, as identified in Table 2-9. The majority of irrigation customers are provided water based on miner's inch deliveries. Some of the wholesale sales to other agencies are based on volume and flow values per the purchase contracts

Purchase and ordering are also dependent on customer type and water type. Seasonal irrigation use is ordered by customers with at least a 48-hour lead time. Wholesale customers have annual water contracts that identify maximum flows and/or volumes over time. Other types of water orders also require a 48-hour lead time. Similarly, water shutoffs require at least a 24-hour lead time. Ordering times are summarized in Table 2-10.

Table 2-8. (DWR Worksheet 10) Supplier Delivery System (2020)

Type	Checked if Used
Seasonal Irrigation Service	X
Fall/Winter Water Service	X
Annual Raw Water Service	X
Intermittent Flow Service	X
Demand Water Service	X
Tank or Temporary Construction Water Service	X
Surplus Water Service (outside the District Service Area Boundaries)	X
Rotation	X

Table 2-9. (DWR Worksheet 11) Water Allocation Policy

Basis of Water Allocation	Checked if Used			Allocation	
	Flow	Volume	Seasonal Allocations	Normal Year	% of Water Deliveries
Area within the Service Area	X	X	X	100%	100%
Amount of Land Owned					
Riparian Rights					
Other					

Table 2-10. (DWR Worksheet 12) Actual Lead Times

Operations	Hour/Days
Water Orders	48 Hours
Water Shut-Off	24 Hours

2.2.2 Water Delivery Measurement or Calculations

The majority of the District's irrigation customers purchase irrigation season water, April 15 through October 14, based on miner's inch. The standard measurement for a miner's inch requires a six-inch head of water over the center of the orifice and the water to free flow through the delivery point. For customers that purchase 40 miner's inches or less, the amount of water is delivered through a standard water box and measured through an orifice sized for the amount of water purchased and the available head pressure. For purchases greater than 40 miner's inches, the measurement may be by any industry standard device such as a weir or Parshall flume that will give the most accurate measurement for the situation. Orifices used for customer delivery are checked at a minimum of twice a year for proper sizing, adequate head pressure, and condition of the service point. Flowmeters are included in a maintenance management program and are inspected annually and calibrated according to manufacturer recommendations. Records are kept stating when customer services are turned on and off to assist in calculating the volume of water delivered.

Field checks on canal measuring stations occur three to four times per year. This continual verification allows the District to maintain proper and accurate measurement records (Teledyne, 2016 and USBR, rev. 2001). Open channel flow sites are inspected to ensure structures are plumb, staff gages are level with flume floors and weir crests, approach flows are laminar, and that no backwater conditions exist in the tailrace of the structures. Current meters are used as a secondary verification to confirm the volume of flow.

Table 2-11 summarizes the measurement devices used by the District to measure water in the canals and deliveries to agricultural water customers, frequency of calibration and maintenance, and the estimated level of accuracy of the measurement devices. Additional water measurement information per the AWMP code requirements is provided in Section 8 and Appendix G.

Table 2-11. (DWR Worksheet 13) Water Delivery Measurements

Measurement Device	Frequency of Calibration, months	Frequency of Maintenance, months	Estimated Level of Accuracy, Error %
Orifice	Bi-Annual	Annual	5-12%
Flow meter	Bi-Annual	Annual	2-5%
Parshall Flume	Annual	Annual	5-12%
Uncontrolled flume sections	Annual	Annual	5-12%

While accuracy for weirs and flumes is likely better in laboratory-controlled environments, field conditions likely degrade accuracies. Due to the frequency of inspections and site management, District weirs, flumes and orifices have an estimated accuracy of 5-12 percent while flowmeter estimated accuracy is 2-5 percent. These values represent the District's best estimate with the existing facilities and information available.

2.2.3 Water Rate Schedules and Billing

This District's current rate schedule is provided in Appendix D. Raw water rates are a uniform volumetric charge, consisting of a combination of fixed charge (a constant fee assessed to customer) and a water rate (a price per unit of water delivered). Raw water is sold by quantity in increments of either miner's inches or acre feet. The District has several rate schedules for raw water depending on the type of service provided. All water rates are determined on a cost of service basis, consistent with Proposition 218.

Similar to rates, the District also has several billing frequencies depending on the type of service. For a seasonal irrigation service, the customer has the choice of paying the amount in full or making payments in three installments. Most of the raw water customers purchase water for the summer irrigation season (April 15 to October 14). Tables 2-12, 2-13, and 2-14 describe relevant information from the District's current agricultural water rates.

Table 2-12. (DWR Worksheet 14) Water Rate Basis

Water Charge Basis	Check if Used	% of Water Deliveries	Description
Volume of Water Delivered	X	100%	Based on water volume ordered in miners inch ~~which includes duration~~
Rate and Duration of Water Delivered			
Acre			
Crop			
Land Assessment			
Other			

Table 2-13. (DWR Worksheet 15) Rate Structure

Type of Billing	Check if Used	Description
Declining		
Uniform	X	Based on volume ~~delivered~~ordered
Increasing Block Rate		
Other	X	Fixed fee

Table 2-14. (DWR Worksheet 16) Frequency of Billing

Frequency	Check if Used
Weekly	
Biweekly	
Monthly	X
Bimonthly	
Tri-Annually	
Annually	X

2.3 Drought Plan and Water Shortage Allocations Policies

The purpose of the Nevada Irrigation District's Drought Plan is to provide guidance to staff and customers to help minimize drought or water supply shortage impacts. The plan identifies drought action levels, appropriate agency responses, water demand reduction goals, and provides recommended demand management measures to assist customers in water conservation. This following drought plan is presented in accordance with the Urban Water Management Plan water shortage contingency plan requirements in order to maintain consistency across both documents.

2.3.1 Vulnerability to Drought

As described in Sections 4 and 6, the District's water supplies are vulnerable to drought and are expected to be further impacted by climate change. The supply system relies on spring and summer snow melt runoff, as well as capture and storage in reservoirs to release during the irrigation season. During droughts and periods of warmer winters when there is less snowpack, runoff is reduced, and the District must manage its storage and customer demands to meet requirements. The supply availability reduction is dependent on the severity and length of the drought. In addition to the hydrologic impacts on NID's supplies, there can also be regulatory reduction as well, as during the last drought the State mandated supply curtailments and NID was not able to access its available supply.

2.3.2 Resiliency Planning

NID conducts ongoing analysis of its supply reliability and reports on current understanding through its various planning efforts including the Urban Water Management Plan, Plan for Water, Staff Reports to Board, Raw Water Master Plan, and others. Plan for Water is the District's overarching integrated water resources planning effort. As part of the Plan for Water process, NID has developed a climate change hydrologic model to project and ~~analyze~~ analyze supply availability under different climate change scenarios. Findings from this process will then be used to identify and evaluate mitigation measures. Mitigation measures could include the following:

- Data gathering and information analysis enhancement to further inform decision making
- Hydrologic modeling enhancements
- Demand reduction measures
- Supply augmentation opportunities
- Policy enhancements

The Plan for Water process is ongoing and has not yet begun the mitigation measure evaluation phase. The Plan for Water process is a deliberate, phased approach including customer and stakeholder involvement, and will continue for many months. Once the process develops mitigation strategies and decision support frameworks, NID will update the resiliency planning efforts in the next AWMP. As the Plan for Water process is developing mitigation measures for drought resiliency, NID will continue to implement its current drought and water shortage contingency efforts as described below.

2.3.3 Annual Water Supply and Demand Assessment Procedures

NID conducts an annual analysis of supply and demand projections to help inform water resources management decisions for the coming year. The analysis incorporates various data sources used as evaluation criteria to project probable demands and supply availability for the coming year. Data sources to consider include:

- Projected weather conditions
  - Precipitation versus historical on monthly basis
  - Snow survey results
- Projected Unconstrained Demand
  - Production versus historic on monthly basis
  - New customer growth
  - Water use objective monthly tracking versus goal
  - Identify demand for treated water-supplied water features separate from swimming pools and parks
- • Projected Supply Availability (assuming no constraints)
  - Reservoir storage
  - Forecasted runoff
  - PGE contract water
  - Recycled water

The general procedure is listed below. NID may modify this process based on available data, significant events, process restrictions, or other external factors that may impact the process.

1. Dry Year Projection
Compile existing weather data to characterize past 12 months conditions. Considering recent conditions and available forecasts, select a projected dry year scenario from the historical precipitation record. Dry year scenario to be at least 60 percent of normal precipitation at the Bowman Lake Reporting Station.

2. Demand Projection
Project unconstrained monthly demand for the next 12 months factoring in existing demands, water use budgets, weather projections, and growth projections.

3. Project Supply Availability
Utilize the existing conditions coupled with historic availability and other known conditions to project probable monthly availability. Summarize the current supply availability over the next 12 months

assuming no supply restrictions. Project next year supply availability over the next 12 months assuming the next year is a dry year as selected in Step 1.

4. Supply Infrastructure Restraints
Identify and describe any projected infrastructure restrictions to delivering supply in the next 12 months.

5. Project Next Year Supply Deliverability
Using results from Steps 3 and 4, identify the current conditions normal year and dry year projected supply delivery for the next 12 months.

6. Projected Dry Year Supply to Demand Comparison
Compare the projected next year unconstrained demand to the next year dry-year projected supply deliverability. Identify any projected seasonal shortfall in supply to meet the unconstrained demand, cross referencing the condition to one of the six water shortage levels identified below in this plan.

7. Develop and propose water resource management strategies to address the projected demand to supply comparison, including reference to the one of the water shortage stages identified in this section below.

8. The annual water supply demand assessment is presented to the Board of Directors for discussion and questions. Staff will modify/update the assessment per direction from the Board. The Board will approve the assessment and its findings, and can also provide direction to implement specific management strategies at that time. The general proposed timeline is as follows:

- Begin assessment by staff – February
- Present assessment to Board – no later than April
- Submit to State per CWC Section 10632.1 – by July 1

2.3.4 Water Shortage Stages and Responses

NID maintains this drought plan to identify and respond to potential and actual water shortage conditions. Six water shortage levels are presented per CWC Section 10632(a)(3). Proposed alternative response actions for each stage are identified with each respective projected impact on demand reduction or supply augmentation listed. NID will evaluate each specific shortage condition and select the appropriate response action(s) for implementation.

The District maintains a water conservation program that is ongoing, even during periods of normal water supply. The District has found this program to be effective in reducing overall water consumption and managing demands during periods of normal water supply and water shortage conditions. The District will rely on its regular conservation program as well as additional measures to respond to the range of water supply shortages that may arise.

Stage 1 – 10% Supply Shortage
Forecast April 1 Available Supply: 234,999 to 211,500 AF Actions include normal rules and regulations plus those listed below
Treated Water and Municipal Water Customers - Actions to Reduce Demand up to 10 Percent • Communicate conservation regulations as identified in Section 3.05 of District Rules and Regulations. • Encourage customers to limit outdoor irrigation to every other day. • Request fire department limit practices drills and hydrant flow testing.
Ag Water Customers - Actions to Reduce Demand up to 10 Percent • Allow Ag customers to voluntarily reduce purchase allotment for the year while reserving their right to return to their previous allotment in the following year if water supply is available.
District Actions • Declare no new or increased surplus water availability. • Leak repair receives higher priority. • Increase drought awareness through additional public outreach measures that notify public and customers for declared stage, requirements, and available conservation program support. • Standard rates in effect.
Enforcement Measures • Standard measures per District Rules and Regulations.

Stage 2 – 20% Supply Shortage
Forecast April 1 Available Supply: 211,499 to 188,000 AF Actions include Stage 1 plus those listed below
Treated Water and Municipal Water Customers - Actions to Reduce Demand up to 20 Percent • Outdoor irrigation limited to every other day and maximum three days per week. • Odd address number can irrigate outdoors on Tuesday, Thursday, and Saturday. • Even address number can irrigate outdoors on Wednesday, Friday, and Sunday. • Customers shall adjust irrigation controllers to reduce usage for each zone by 20 percent. • Corresponding to Fall Daylight Saving Time, customers shall strive to limit outdoor irrigation to only once per week.
Ag Water Customers - Actions to Reduce Demand up to 20 Percent • Limit new water sales and increases to 1 miners inch. • Impose changes to delivery schedules to achieve 20 percent demand reductions.
District Actions • Declare no new or increased surplus water availability. • Declare no new or increase in Fall/Winter deliveries. • Communicate mandatory reduction targets to customers. • Inform Municipal customers of mandatory 20 percent reduction requirement. • Distribution system flushing only for public health & safety. • Organize Drought Hardship Committee. • Purchase available Contract water to achieve a target carryover of 110,000 acre feet. • Implement Stage 2 conservation rates.
Enforcement Measures • A written warning will be issued for a first violation. • A District imposed fine of $250 for a second violation, and any subsequent violation, and doubling with each subsequent violation up to a maximum of $1,000 for any single violation. • Upon a fourth violation, or upon an earlier violation the General Manager determines to create a significant threat to the goals of the stage, the General Manager may order the installation of a flow restrictor on service lines in question. • Similar penalties, fines and charges may be implemented by the District as needed to enforce the restrictions on specific prohibited water uses.

Stage 3 – 30% Supply Shortage
Forecast April 1 Available Supply: 187,999 to 164,500 AF Actions include Stage 2 plus those listed below
Treated Water and Municipal Water Customers - Actions to Reduce Demand up to 30 Percent • Outdoor irrigation limited to two days per week. • Odd address number can irrigate outdoors on Thursday and Sunday. • Even address number can irrigate outdoors on Wednesday and Saturday. • Customers shall adjust irrigation controllers to reduce usage for each zone by 30 percent. • Irrigation of ornamental turf in public street medians with treated water prohibited.
Ag Water Customers - Actions to Reduce Demand up to 30 Percent • Limit new water sale and increases to ½ miners inch. • Impose changes to delivery schedules to achieve 30 percent demand reductions.
District Actions • Declare no surplus water availability for exterior boundary customers. • Declare no Fall water availability. • Communicate mandatory reduction targets to customers. • Inform Municipal customers of mandatory 30 percent reduction requirement. • Purchase available Contract water to achieve a target carryover of 100,000 acre feet. • Implement Stage 3 conservation rates. • Dedicate additional staff for increased water waste patrols.
Enforcement Measures • A written warning will be issued for a first violation. • A District imposed fine of $250 for a second violation, and any subsequent violation, and doubling with each subsequent violation up to a maximum of $1,000 for any single violation. • Upon a fourth violation, or upon an earlier violation the General Manager determines to create a significant threat to the goals of the stage, the General Manager may order the installation of a flow restrictor on service lines in question. • Similar penalties, fines and charges may be implemented by the District as needed to enforce the restrictions on specific prohibited water uses.

Stage 4 – 40% Supply Shortage
Forecast April 1 Available Supply: 163,499 to 141,000 AF Actions include Stage 3 plus those listed below
Treated Water and Municipal Water Customers - Actions to Reduce Demand up to 40 Percent • Outdoor irrigation limited to one day per week. • Customers shall adjust irrigation controllers to reduce usage for each zone by 40 percent.
Ag Water Customers - Actions to Reduce Demand up to 40 Percent • Impose changes to delivery schedules to achieve 40 percent demand reductions.
District Actions • Declare no new or increased Ag sales. • Communicate mandatory reduction targets to customers. • Inform Municipal customers of mandatory 40 percent reduction requirement. • Purchase available Contract water to achieve a target carryover of 90,000 acre feet. • Implement Stage 4 conservation rates.
Enforcement Measures • A written warning will be issued for a first violation. • A District imposed fine of $250 for a second violation, and any subsequent violation, and doubling with each subsequent violation up to a maximum of $1,000 for any single violation. • Upon a fourth violation, or upon an earlier violation the General Manager determines to create a significant threat to the goals of the stage, the General Manager may order the installation of a flow restrictor on service lines in question. • Similar penalties, fines and charges may be implemented by the District as needed to enforce the restrictions on specific prohibited water uses.

Stage 5 – 50% Supply Shortage
Forecast April 1 Available Supply: 140,999 to 117,500 AF Actions include Stage 4 plus those listed below
Treated Water and Municipal Water Customers - Actions to Reduce Demand up to 50 Percent • Outdoor irrigation prohibited.
Ag Water Customers - Actions to Reduce Demand up to 50 Percent • Impose changes to delivery schedules to achieve 50 percent demand reductions.
District Actions • Communicate mandatory reduction targets to customers. • Inform Municipal customers of mandatory 50 percent reduction requirement. • Purchase available Contract water to achieve a target carryover of 80,000 acre feet. • Implement Stage 4 conservation rates.
Enforcement Measures • A written warning will be issued for a first violation. • A District imposed fine of $250 for a second violation, and any subsequent violation, and doubling with each subsequent violation up to a maximum of $1,000 for any single violation. • Upon a fourth violation, or upon an earlier violation the General Manager determines to create a significant threat to the goals of the stage, the General Manager may order the installation of a flow restrictor on service lines in question. • Similar penalties, fines and charges may be implemented by the District as needed to enforce the restrictions on specific prohibited water uses.

Stage 6 – Over 50% Supply Shortage
Forecast April 1 Available Supply: less than 117,500 AF Actions include Stage 5 plus those listed below
Treated Water and Municipal Water Customers - Actions to Reduce Demand greater than 50 Percent • Health and safety use of water only.
Ag Water Customers - Actions to Reduce Demand greater than 50 Percent • Impose changes to delivery schedules to achieve target demand reductions.
District Actions • Communicate mandatory reduction targets to customers. • Inform Municipal customers of mandatory health and safety use only. • Purchase available Contract water to achieve a target carryover of 75,000 acre feet. • Implement Stage 4 conservation rates. • Other actions as identified specific to the shortage condition.
Enforcement Measures • A written warning will be issued for a first violation. • A District imposed fine of $250 for a second violation, and any subsequent violation, and doubling with each subsequent violation up to a maximum of $1,000 for any single violation. • Upon a fourth violation, or upon an earlier violation the General Manager determines to create a significant threat to the goals of the stage, the General Manager may order the installation of a flow restrictor on service lines in question. • Similar penalties, fines and charges may be implemented by the District as needed to enforce the restrictions on specific prohibited water uses.

2.3.5 Communications

NID maintains an established and effective communications program to inform its customers, neighbors, and other stakeholders of issues, updates, and policies. Implementation of the drought plan will utilize the existing communication program structure to inform customers and others of the declared shortage stage and respective actions and restrictions in place.

The Board meetings addressing the Annual Water Supply and Demand Assessment and/or a potential water shortage declaration will be noticed per normal Board meeting public notification procedures. The meeting will also be announced through regular press release protocols.

Once a shortage stage has been declared by the Board of Directors, NID will notify its customers and others through a range of efforts. The stage and restrictions will be identified in a press release, as well as customer billing statements. The District's website will be updated to feature the shortage declaration, restrictions, and resources available to customers from the District and other entities to help meet the restrictions. Subsequent Board of Directors meetings will include a review of the shortage condition, customer response results, and discussion and recommendations for potential modifications.

2.3.6 Compliance and Enforcement

NID was formed as an irrigation district under the California Water Code and therefore is granted the authority to enforce its rules and regulations, as well as levy and collect fines. NID will declare a water shortage emergency within its service area boundaries when it determines through its best judgement that normal demands and requirements of its customers cannot be met with the projected supplies.

Once a water shortage stage has been declared, NID will enforce compliance through a multitude of measures ~~commiserate~~ commensurate with each reduction goal. The District will either implement measures per this plan or will provide further discrete requirements through ordinances.

Measures will be enforced through the following procedures, in addition to any enforcement measures identified in ordinances. NID will modify and adjust the compliance strategy as necessary for each respective situation.

- A written warning will be issued for a first violation.
- A District imposed fine of $250 for a second violation, and any subsequent violation, and doubling with each subsequent violation up to a maximum of $1,000 for any single violation.
- Upon a fourth violation, or upon an earlier violation the General Manager determines to create a significant threat to the goals of the ordinance, the General Manager may order the installation of a flow restrictor on service lines in question.
- Similar penalties, fines and charges may be implemented by the District as needed to enforce the restrictions on specific prohibition water uses.

Upon declaration of a Stage 2 shortage, NID will appoint and convene the Drought Hardship Committee. The Drought Hardship Committee is an advisory body and shall consist of one appointee from each director's division and the Water and Hydroelectric Operations (WHO) Board Committee. District Operation's staff will work closely with the committee.

The Drought Hardship Committee's purpose is to review the applications and determine whether additional water can be provided to the applicant. Before any appeal for a variance can be heard by the Drought Hardship Committee, the customer must submit a Drought Hardship Application and provide proof the water is being used for commercial agricultural purposes.

For the purposes of this Plan, the definition of commercial agriculture is an agricultural producer engaged in a for profit operation with a minimum gross annual sales of $3,000 and a minimum capital investment of $15,000. Commercial agricultural producers file a Schedule F with the Internal Revenue Service for their farming or ranching operation.

Preference will be given to applicants with an economic hardship and/or those utilizing best management practices and with efficient irrigation practices in place. Variances may be approved for increases in water deliveries, seasonal variances or other protocols as determined by the Drought Hardship Committee. No such variance or appeal, however, shall be granted if the Board of Directors finds that the variance or appeal will adversely affect the public health or safety of others and is not in the public's best interest.

Under the California Water Code, in critical water supply situations, there is a priority that shall be allocated as follows:

1. Human Consumption
2. Livestock and Animals
3. Perennial Crops
4. Annual Crops

Upon granting a Drought Hardship Variance or appeal, the Board may impose any other conditions it deems to be just and proper.

2.3.7 Financial Considerations for Drought Conditions

Implementing any stage of the drought plan is expected to impact the District's financial status. As experienced during previous droughts, it is expected that revenues will decrease with decreasing usage, and expenses will increase with additional monitoring and enforcement responsibilities, as well as additional costs for replacement supplies if needed.

The District maintains a rate structure that includes a fixed meter charge plus increasing volumetric block rates for residential customers and volumetric rates for irrigation customers. Volumetric revenue is approximately 53 percent of total revenue. The drought rate structure is set to offset revenue loss from mandatory demand reduction up to 40 percent. Demand reduction above 40 percent will reduce revenue accordingly. Actual impacts will vary depending on customer response.

Enforcement, enhanced outreach, and increase of customer data tracking can add to the District's costs around a water shortage condition. Often times, these additional efforts are prioritized for current staff, and other normal work efforts are delayed or reassigned. If conditions warrant, the District will seek assistance through additional staffing or third-party service providers. These costs depend on the level of support and will be evaluated on a case-by-case basis. Increase in costs can also be associated with additional equipment obtained to support the District's outreach, enforcement, tracking, and management efforts.

Depending on the situation, the District may also be able to obtain supplemental water supplies to mitigate the water shortage condition. These supplies are expected to be more costly than regular supplies, and will be evaluated for each specific opportunity.

It is reasonable to expect financial impacts or changes in cash flow during a prolonged water shortage condition. The District will enact a range of management and financial resources depending on the specific situation that include:

- Drought rate surcharge
- Utilizing financial reserves
- Capital project deferment
- Operational and maintenance expense deferment
- Increased revenue from penalties
- And others as identified

2.3.8 Monitoring, Reporting, and Refinement

The drought plan aims to ensure demands are reduced and/or supply is augmented to balance supply and demand. The District will enact various actions commensurate~~commiserate~~ with each respective stage. The District will then monitor results to maintain the supply/demand balance. Similar to the supply and demand projections used to establish a shortage condition in the annual assessment procedure, the District will monitor the same data to determine effectiveness and efficacy. District staff will report to the Board of Directors at least monthly on status and results. Data reporting will include:

- Actual demands to projected demands per customer class and on total
- Actual supply availability and utilized to projected availability per each supply source
- Projected supply availability for next 12 months per supply source
- Any specific requirements identified by the State in the future

Data will also be submitted to the State per any future reporting requirements.

Progress and efficacy will be summarized from the results data. The District will evaluate the need for any changes or modifications to the declared water shortage stage or actions based on the results. The District may determine to enact additional measures, develop ordinances, or update the drought plan as a whole. Any drought plan update or modification will be conducted through the Board of Directors meeting process, unless specific conditions require otherwise.

3 Description of Quantity of Water Uses

10826(b). Describe the quantity and quality of water resources of the agricultural water supplier, including all of the following:
(1)-(4) not shown here
(5) Water uses within the agricultural water supplier's service area, including all of the following:
(A) Agricultural
(B) Environmental
(C) Recreational
(D) Municipal and industrial
(E) Groundwater recharge, including estimated flows from deep percolation from irrigation and seepage

Water uses within the District's service area are agricultural, environmental, recreational, and municipal. The District does not use water for groundwater recharge. The District is currently not participating in any transfers and/or exchanges, but has in the past.

3.1 Agricultural Water Use

The District's agricultural water deliveries for the planning period are presented in Table 3-1. The District characterizes agricultural sales as applied water that does not include precipitation and distribution losses. Table 3-1 presents the applied water measured by the District.

The District service area does not overlay a California Department of Water Resources-defined groundwater basin (except for the far southwestern section of the service area by Lincoln). Limited amounts of groundwater are available throughout the service area through fractured rock groundwater systems (CABY, 2020 and USGS, 1984). The District does not utilize groundwater as a supply source. ~~The District is not aware of any growers that may use private groundwater wells in addition to District-supplied water. To date t~~The District does not monitor or track private groundwater usage. As stated in Chapter 5, the District will coordinate with the counties in future to better understand private groundwater use.

Table 3-1. (DWR Worksheet 20) Annual Agricultural Water Use, AF

Source	Planning Cycle				
	2016	2017	2018	2019	2020
Agricultural Water Supplier Delivered					
Surface Water[1]	110,356	109,476	109,343	107,439	109,016
Groundwater	0	0	0	0	0
Other (Define)					
Other Water Supplies Used					
Surface Water					
Groundwater					
Other (Define)					
Total	110,356	109,476	109,343	107,439	109,016

[1]~~Purchased~~ [1]Ordered amount.

There are multiple crops within the District's service area that vary due to topographical, geological, climatic, and soil condition differences. NID surveys its agriculture customers annually to inventory the type and approximate acreage of crops cultivated by their customers. NID checks the reported value

against past reports, but does not verify and validate every report. The customer-provided crop data is tabulated into Crop Reports. Information from the reports ~~are~~ is provided to the California State Water Resources Control Board with the District's annual water rights filings.

The District currently does not collect or maintain detailed independent cropping information. The District relies on the self-reported surveys provided by customers. The District also does not collect or maintain detailed parcel-level soil information, irrigation system information, or specific agronomic water requirements for individual customers. As such, the District uses the types of crops and acreages in the self-reported survey to estimate water use components (for example, evapotranspiration (ET)) in the water budget calculation as described in Chapter 5.

Data from the crop reports are summarized in Table 3-2 for 2016-2020. The largest crops by acreage for 2020 are irrigated pasture and family gardens/orchards (61 and 20 percent, respectively). Many of the District's irrigation customers have ten acres or less of irrigated land. Table 3-2 lists the year 2020 total inches sold as reported on the customer survey. The customer survey values, including actual crop types and acreage, are not verified by NID. Water sold cannot be used to calculate crop duty factor as they do not represent each individual user's irrigation patterns, strategies, or actual application. NID acknowledges the customer-supplied data is not verified, and is proposing to enhance the data collection and refinement process as described in the management objectives in Section 5.3.

Table 3-2. (DWR Worksheet 21) Agricultural Crop Data for 2016-2020, acres

Crop	Irrigated Acres					2020 Miners Inch Sold[2]
	2016	2017	2018	2019	2020	
Cereals - Corn	22	32	32	33	34	12.47
Cereals - Rice	157	157	154	96	97	5.69
Cereals - Wheat	2	2	2	2	2	0.49
Cereals - Other	29	29	29	29	30	12.99
Forage - Alfalfa Hay	116	134	134	155	155	43.37
Forage - Hay Other	824	808	802	853	826	227.92
Forage - Irrigated Pasture	18,867	19,309	19,419	19,702	19,727	7,043.42
Forage - Silage	9	9	9	9	19	4.54
Forage - Other	59	189	190	190	192	19.46
Fruits - Apples	224	228	229	239	248	90.15
Fruits - Berries - All	110	125	126	138	136	41.26
Fruits - Cherries	58	58	55	56	54	14.73
Fruits - Citrus - All	151	171	161	166	182	52.46
Fruits - Grapes - Table	56	54	50	52	54	16.56
Fruits - Grapes - Other	627	631	642	669	661	162.6
Fruits - Kiwi	23	24	24	21	21	11.39
Fruits - Peaches	100	103	105	112	118	39.47
Fruits - Pears	121	139	131	128	134	39.39
Fruits - Plums	140	142	144	148	160	49.79
Fruits - Other	112	114	229	208	218	70.87

Crop	Irrigated Acres					2020 Miners Inch Sold[2]
	2016	2017	2018	2019	2020	
Fruits - Persimmons	3	3	2	2	2	0.73
Fruits - Apricots	1	1	1	1	1	0.23
Nursery	383	371	378	376	348	206.46
Cannabis	N/A	13	13	14	12	2.42
Nuts	171	193	194	196	203	34.53
Nuts - Walnuts	15	15	14	12	8	1.92
Nuts - Chestnuts	15	15	12	12	12	6.8
Nuts - Pistachios	1	1	1	1	1	0.62
Nuts - Almonds	13	13	13	13	13	4.36
Other	754	743	722	729	731	62.63
Golf Course	984	984	984	986	986	674.50
Other - Parks	152	152	221	224	224	47.42
Other - Exempt	0	0	0	0	0	0
Family Garden, Orchard, YD.	6,026	6,146	6,174	6,244	6,409	3,073.60
No Report .5MI / A	304	361	444	398	307	153.39
Pond	11	11	11	11	12	52.54
Total Irrigated Acres[1]	30,629	31,470	31,835	32,205	32,323	12,306

[1] Totals may not add due to rounding. Data from NID agricultural customer survey

[2] Water sold cannot be used to calculate crop duty factor as they do not represent each individual user's irrigation patterns, strategies, or actual application

3.2 Environmental Water Use

A portion of the District's water is utilized for environmental purposes, which includes non-recoverable in-stream flows and environmental water sales to other agencies such as the CDFW for the Spence~~r~~ville Wildlife Area. The non-recoverable in-stream flows are located in the Middle Yuba River below Milton Diversion, Canyon Creek below Bowman Reservoir, and the Bear River below Combie Reservoir. Under the 1963 California Department of Fish and Game (now known as California Department of Fish and Wildlife, or CDFW) Agreement, the Yuba-Bear FERC License, and from terms in water right permits and licenses, the District releases water to maintain environmental conditions in creeks and rivers downstream of District facilities. The total amount for non-recoverable instream flow and environmental water use for the period 2016 through 2020 is shown in Table 3-3. The values reported for streams in Table 3-3 are estimated values for 2016 through 2020. As a matter of conservative operational strategy, NID releases more environmental water than required to ensure flows remain above the minimum permit requirements. Future environmental flows due to pending federal and state regulatory requirements will be different (HDR, 2020).

Table 3-3. (DWR Worksheet 24) Environmental Water Use, AF

Environmental Resource	Water Use, Acre-feet				
	2016	2017	2018	2019	2020
Vernal Pools					
Streams	9,410	9,410	9,410	9,410	9,410
CDFW Purchase	1,270	1,270	1,270	1,270	1,270
Lakes or Reservoirs					
Riparian Vegetation					
Ponds					
Total	10,680	10,680	10,680	10,680	10,680

3.3 Recreational Water Use

The District owns and operates reservoirs in the Yuba and Bear River watersheds, which also provide recreational opportunities in addition to functioning as storage reservoirs. In the Mountain Division, the District owns and operates campgrounds at Faucherie, Bowman, and Jackson Meadows reservoirs. The Mountain Division campgrounds are normally snowed in during the winter and opened for recreation from Memorial Day through Labor Day.

In the Lower Division in the Sierra foothills at both Rollins and Scotts Flat Lake reservoirs, camping, fishing, swimming, sunning, boating, water skiing, sailing, board sailing, and other activities are popular. Day use parks, campgrounds, and beaches are operated by the District and in some cases by private operators under contract with the District.

The District sells water to homeowner associations which utilize raw water for recreational lakes and golf courses such as Lake of the Pines, Dark Horse Golf Course, Lake Wildwood, Alta Sierra, Nevada County Country Club, as well as Auburn Recreation District sports fields, Turkey Creek Golf Course, and Lincoln Hills, Sun City. Table 3-4 summarizes the recreational water use for golf courses and parks.

Table 3-4. (DWR Worksheet 25) Recreational Water Use

Recreational Facility	Water Use, Acre-feet				
	2016	2017	2018	2019	2020
Golf Courses	6,920	6,881	6,879	6,121	6,121
Parks	373	373	376	430	430
Total	7,293	7,254	7,255	6,550	6,550

3.4 Groundwater Recharge Use

The majority of the District has no groundwater aquifer per California Department of Water Resources Bulletin 118 with the exception of a very small portion of the District's service area in Lincoln, which is on the eastern boundary of the Sacramento River Basin, North American Sub-Basin. The District does not utilize groundwater as an existing or planned source of water supply for agricultural customers or recharge due to limited groundwater availability. The District has no groundwater facilities. The District is aware that many private users utilize groundwater for domestic usage. However the District does not track private groundwater use at this time.

The Act requires an estimate of seepage and deep percolation to be presented in the AWMP. Estimating such values is extremely difficult in a fractured rock system ranging from shallow bedrock to deeper alluvium areas. Until more detailed data is collected, and more substrate information is known, NID is estimating seepage and percolation as the water loss detailed below.

3.5 Municipal and Industrial Water Use

The District has retail and wholesale municipal and industrial customers. The District sells both treated and raw wholesale water to the City of Grass Valley, Nevada City, Nevada City School of the Arts, Lake Vera Mutual, and Placer County Water Agency (PCWA). The water sold to PCWA is for use in NID's service area in the City of Lincoln. The total municipal water sales for 2016 through 2020 are provided in Table 3-5.

Table 3-5. (DWR Worksheet 26) Municipal/Industrial Water Use

Municipal/Industrial Entity	Water Use, Acre-feet				
	2016	2017	2018	2019	2020
NID Retail Customers - Treated Water	7,178	7,818	8,101	7,933	8,522
City of Grass Valley - Treated Water	19	38	33	1	50
Lake Vera Mutual Water Company - Treated Water	18	18	22	24	22
City of Grass Valley Broadview Heights - Treated Water	34	37	41	36	36
Total Treated (customer meters)	7,249	7,911	8,197	7,994	8,630
Total Treated (WTP inflow[1])	8,942	9,752	10,061	9,269	10,537
NID annual raw customers – Raw Water	3,527	3,538	3,395	3,262	3,309
City of Grass Valley - Raw Water	942	957	1,041	842	862
Nevada City - Raw Water	187	267	214	114	507
Nevada City School of Arts - Raw Water	5	5	6	7	5
Placer County Water Agency - Raw Water	571	1,349	1,430	1,188	1,517
Total Raw	5,232	6,116	6,086	5,413	6,200
Total Municipal/Industrial	14,174	15,868	16,147	14,682	16,737

[1] WTP inflow is total raw water to NID treatment plants

3.6 Water Loss

Water losses in the agricultural distribution system consist of evaporation and canal leakage, seepage, spillage, stock usage, construction water, and other unauthorized usages. NID has assumed a 15 percent loss in its previous ~~the~~ Raw Water Master Plan and canal analysis efforts. This loss factor is applied to the total raw water diversions as an estimate of water loss in the canal system. Future improvements and enhancements in canal flow and customer purchase measurement will improve water loss estimation. The water loss estimate is summarized in Table 3-6.

Table 3-6. (DWR Worksheet 29) Other Water Uses

Water Use	Water Use, Acre-feet				
	2016	2017	2018	2019	2020
Total Canal Diversions	133,682	136,219	144,786	141,482	152,947
Loss Factor	15%	15%	15%	15%	15%
Water Loss - Distribution, seepage, evaporation, spills[1]	20,052	20,433	21,718	21,222	22,942

[1]15 percent loss applied to total diverted into canal system.

3.7 Total Water Use

Total water use is summarized in Table 3-7.

Table 3-7. Total Water Uses

Use	Water Use, Acre-feet				
	2016	2017	2018	2019	2020
Agricultural (ordered)	110,356	109,476	109,343	107,439	109,016
Environmental	10,680	10,680	10,680	10,680	10,680
Recreational	7,293	7,254	7,255	6,550	6,550
Municipal	14,174	15,868	16,147	14,682	16,737
Groundwater Recharge	0	0	0	0	0
Canal water loss to deep percolation and other unmeasured uses	20,052	20,433	21,718	21,222	22,942
Total:	162,555	163,711	165,143	160,573	165,925

4 Description of Quantity and Quality of Supplies

10826(b). Describe the quantity and quality of water resources of the agricultural water supplier, including all of the following:
(1) Surface water supply
(2) Groundwater supply
(3) Other water supplies
(4) Source water quality monitoring practices
(5) quote not shown here

This section describes the quantity and quality of water resources available to the District and includes a description of water quality monitoring programs.

4.1 Surface Water Supply

The District's primary source of supply is local surface water derived principally from the Yuba River, Bear River, and Deer Creek watersheds that is diverted and stored under the Districts pre-1914 and post-1914 appropriative water rights. The water rights allow for diversion and/or storage of approximately 450,000 AF per year (AFY). The District has an extensive system of storage reservoirs that provides surface water supply to the District's six water treatment plants as well as to the raw water customers. The District also maintains a contract with PG&E to purchase surface water that originates from the same supply sources as the District water rights supply.

4.1.1 Water Rights

The District was originally organized for the purpose of storing and delivering irrigation water to farmers and ranchers. In the early 1920's the District acquired storage and regulating facilities in the upper reaches of the Middle and South Yuba Rivers. In 1926, the District acquired most of its Canyon Creek holdings including the Bowman, Sawmill, French, and Faucherie Reservoirs. Associated water rights were also obtained. Deer Creek water rights were obtained in the 1920's for the development of Scott's Flat Reservoir. The District's surface water supply water rights are divided into two main categories:

- Watershed runoff
- Carryover storage in surface reservoirs

Watershed Runoff. This supply includes water rights to runoff from the District's watershed. Watershed runoff is the District's primary water supply. The amount of runoff and the manner in which it is used depends upon the amount of water contained in the snowpack and the rate at which the snowpack melts. District water rights include 22 pre-1914 rights acquired from mining interests, along with 28 post-1914 rights filed with the State of California to provide for domestic, municipal, industrial, recreational, power, and irrigation uses, and three riparian rights. These include rights for both consumptive and power purposes. The total water right volumes consist of storage rights, direct diversion rights, and some are a combination of both. The total quantity estimated for diversion and/or storage under current consumptive water rights totals approximately 450,000 AF on an annual basis.

The most prominent and obvious cause for the fluctuation in natural runoff is the variability in hydrologic conditions, as seen in the wide variations in annual rainfall/snowpack accumulations. Over the last 30 years runoff has fluctuated from less than 80,500 AF in a dry year (2015) to over 541,100 AF in wet years (2017). Average runoff from the Upper Division watershed, including the watershed area feeding Scotts Flat Reservoir, is approximately 232,600 AFY. Due to provisions in the PG&E Coordinated Operations Agreement, hydrologic variability, and the fact that the District is not the senior water right holder, the historical runoff data evaluated to estimate the District's average runoff supply does not include supplies from the Bear River and the South Yuba River. The District is likely to receive some water from the Bear

River and South Yuba River sources in dry years. Due to the uncertainty of the amount of supply available from these two sources, it has not been quantified in this AWMP. NID is investigating methods to track this water use in the future.

The system of storage reservoirs and conduits used to transport water to the District's service area boundary is referred to as the Upper Division. The Upper Division is operated in conjunction with PG&E under the terms of a joint agreement.

The District's Yuba-Bear Project's Federal Energy Regulatory Commission (FERC) license (No. 2266) expired in July 2013. The Project is presently undergoing relicensing. The current proposed license includes increased environmental flow requirements, which reduces supply available to meet customer demands.

Carryover Storage. The second largest component of District's supply is carryover storage, which is the volume of water left in storage reservoirs at the end of the irrigation season, usually at the end of September. The District's main storage reservoirs can contain a maximum of 280,085 AF of water. Per the District's Drought Contingency Plan, carryover storage should be held at a level not less than 78,000 AF. This includes a total 33,800 AF of minimum pool requirements reserved for environmental needs and dead storage volume (includes siltation estimates) that cannot be counted upon as a supply resulting in an available storage capacity of 202,085 AF. As with most reservoirs, the District's reservoirs are slowly being filled with sediment. The District is currently studying removal of this material.

The water supply is dependent on snowmelt and rain to fill storage reservoirs, and the District manages its system based on the timing of those events. While there is some natural runoff during normal summer months, the irrigation season (April 15–October 14) demand is met primarily with withdrawals from storage reservoirs. Careful management and operation of the storage reservoirs is required to capture the maximum amount of runoff, minimize spillage from the reservoirs, yet insure there is sufficient volume available in the reservoirs to accommodate runoff during the spring snow melt and storm events. Carryover storage is also affected by Winter/Fall customer demands. Winter/Fall effectively uses carryover storage, meaning less water could be available for the following irrigation season.

4.1.2 Contracted Purchases

The hydropower potential of its water led the District to enter into an agreement with PG&E in 1924 to use of a portion of the District's water through PG&E facilities. At the same time the District secured the option to purchase PG&E water to augment its own supply. Over the years, this agreement has been modified to meet the changing conditions and requirements of both organizations. In 1963, the District and PG&E agreed to develop additional storage capacity on both Middle Yuba and the Bear River. Additional water was also made available by improved and new facilities in the upper Yuba Basin.

The PG&E contract has recently been renewed. The maximum amount available for District purchase is 54,361 AF with reductions based on the Sacramento Valley Index (SVI).

4.1.3 Summary of Surface Water Supply Quantity

The District's use of each surface water supply over the past five years is summarized in Table 4-1. The District's watershed runoff water supply sources are covered by a combination of pre-1914 water rights, post 1914-water rights, and riparian water rights. In some California watersheds including the Sacramento River watershed, the recent drought has resulted in diversion curtailment orders being issued in 2014, 2015, and 2016 on water rights going back to a 1903 priority date. NID assumes the Governor's Office and the State will also attempt to impose restrictions in the future, regardless of water right priority. There are many other potential regulatory and legal restrictions that could affect the District's water supplies. The legislative and regulatory environment at the State level has been trending towards increased water usage restrictions recently, with increased focus on managing to a water budget~~s~~ limit, as well~~s~~ as efforts to increase instream flow values. The District views these efforts as having significant

impacts to its current supply and reliability assumptions, and could greatly restrict supplies the District is allowed to use. The precipitation from 2016-2020 as measured at the NID Bowman Lake precipitation gage is presented in Table 4-2. The District's surface water supplies are summarized in Table 4-~~2~~3.

Table 4-1. (DWR Worksheet 30) Surface Water Supplies

Source Water Supply	Diversion Restriction	Supply, Acre-feet				
		2016	2017	2018	2019	2020
Contract Supply - PG&E	54,361	488	0	0	0	0
Watershed Runoff	450,000	261,300	541,100	189,600	343,700	119,500
Carryover Storage	280,085	104,300	151,000	159,900	146,700	170,000
Total[1]	-	366,088	450,000[2]	349,500	450,000[32]	289,500

[1] Total does not represent actual supply available due to temporal differences between runoff and water rights.
[2] Total limited to NID water rights upper limit of approximately 450,000 AFY.

Table 4-2. 2016-2020 Annual Precipitation – Bowman Lake Rain Gage

2016	2017	2018	2019	2020
96.6 in.	118.3 in.	61.0 in.	87.8 in.	37.7 in.

Table 4-~~2~~3. (DWR Worksheet 31) Restrictions on Water Sources

Source	Restrictions	Name of Agency Imposing Restrictions	Operational Constraints
Contract Purchase (PG&E)	Climatic	PG&E	Flow and volume availability
Watershed Runoff	Legal, environmental, climatic	SWRCB, FERC, other State/ Federal Resource Agencies	Flow and volume availability, temporal availability,
Carryover Storage	Legal, environmental, climatic	District	Volume availability
Recycled Water	Legal, environmental	SWRCB	Treatment Capacity

4.2 Groundwater Supply

Most of the Sierra Nevada foothills located in the District's service area have a fractured rock groundwater system (CABY, 2020), including granitic and metavolcanic (USGS, 1984). NID views the fractured rock groundwater system as low yielding and unreliable for a District supply source. The District does not utilize groundwater as an existing or planned source of water supply or recharge due to limited groundwater availability. The majority of the District's service area has no groundwater aquifer

per California Department of Water Resources Bulletin 118 with the exception of the very small portion of the District's service area in Lincoln, which is on the eastern boundary of the Sacramento River Basin, North American Sub-Basin. The District has no groundwater facilities and does not use groundwater. NID is aware there are private wells in the area used for domestic purposes, but NID does not track private groundwater well inventory or use at this time.

4.3 Stormwater

The District currently has a policy to not divert stormwater runoff as presented in the current stormwater policy (District Policy #6655), provided in Appendix F.

4.4 Recycled Water

Wastewater collection, treatment, and discharge in the District's service area is the responsibility of Nevada City, Grass Valley, and Auburn. The District has no authority or control over wastewater management in the District's service area. The District understands that reuse is an important element of integrated water supply planning and is open to investigations with any of the wastewater utilities to support further development of a reuse supply component.

All wastewater treated within the District service area is discharged to local watercourses. Once discharged, the flow is available for appropriation. Recycled water discharge comingles with the District's water-right supply being transported in the creeks. The combined waters are then diverted from creeks into canals as described below. This supply of water augments the District's overall water supply.

Nevada City: The District utilizes effluent from the Nevada City wastewater treatment plant discharged into Deer Creek. The effluent is comingled with Deer Creek flows and diverted for reuse as agricultural irrigation water.

Grass Valley: The District utilizes effluent from the Grass Valley wastewater treatment plant discharged into Wolf Creek. The effluent is comingled with Wolf Creek flows and diverted for reuse as agricultural irrigation water.

City of Auburn: The District utilizes effluent from the Auburn wastewater treatment plant discharged into Auburn Ravine Creek. The effluent is comingled with Auburn Ravine Creek flows and diverted for reuse as agricultural irrigation water.

Table 4-~~3~~ 4 lists the recycled water use from 2016-2020. Use is estimated based on the WWTP-provided effluent flows during the April 15-October 14 irrigation season. Quality and volume of wastewater effluent discharged is outside of the District's control. However, if effluent volumes were decreased, NID would need to adjust its operations to divert more supply into the affected canal system. There is a large impact if water quality is degraded and NID was unable to divert flows due to contamination. Each respective WWTP is regulated by the State through a discharge permit that addresses actions and requirements to maintain effluent water quality.

Table 4-~~3~~4. (DWR Worksheet 30/31) Recycled Water Supplies

Source	Restrictions/ Constraints	Supply, Acre-feet				
		2016	2017	2018	2019	2020
Recycled Water	Environmental/ treatment capacity	1,378	1,638	1,529	1,598	1,408
Total		1,378	1,638	1,529	1,598	1,408

Note: As reported to the SWRCB based on the irrigation system.

4.5 Drainage from Service Area

The District's agricultural irrigation system is different than typical valley-floor systems. The District's canals supply water to customers. For the most part, any drainage or runoff from customer's parcels are collected and transported downstream through the natural drainage system. The District does not operate or manage drainage canals. Often times the runoff in streams and creeks is re-diverted at a lower point, but NID does not measure runoff individually. NID does measure end-of-canal spillage at five locations where the water does leave the system once spilled. However, there are over 30 canal end spill points throughout the system as well as thousands of individual customer parcels, and therefore ability to measure all drainage is not available at this time.

Table 4-~~4~~ 5 summarizes the total volume measured at the five end points leaving the system for the planning period.

Table 4-~~4~~5. (DWR Worksheet 35) Drainage Discharge

Discharge Type	Discharge, Acre-feet				
	2016	2017	2018	2019	2020
Water Leaving Service Area	3,030	4,680	5,168	4,785	3,696
Total	3,030	4,680	5,168	4,785	3,696

4.6 Water Supply Quality

The District's source water quality and monitoring practices are described in the following subsections.

4.6.1 Surface Water Supply

The District identifies and monitors surface water quality through regular updates of the required Watershed Sanitary Survey. The most recent Survey was completed in 2017 and covers the District's watersheds (insert website reference address). The 2017 Watershed Sanitary Survey Update concludes:

- Areas in the upper watersheds are, in general, minimally impacted by current human activities. However, previous mining era activities have had an impact.
- Current and historic mining operations distributed over large areas in the watersheds have a combined high potential to impact raw water quality.
- During summer months, recreation in the upper watersheds, including body contact recreation, motorized recreation, camping and hiking, bring large numbers of visitors into the area. This increases the potential for source water contamination.
- Major highways, local access roads and railroads are located throughout the watersheds increasing the risks to source water quality.
- Various licensed pesticides and herbicides are used for weed control around the District's canals, however, during the maintenance period, the treatment plants are bypassed.
- Most canals are open; they receive untreated drainage from the uphill slopes and are not protected from vandalism or other sources of contamination.

Natural disasters can also impact water quality. The quality of water supplies can be dramatically affected by fire. Fire and storm damage to the District conveyance facilities may consist of the following elements:

- Damage to parts of canal intakes,
- Collapse or weakening of some sections of canal flumes,
- Erosion and sedimentation of, and landslides into, sections of the canals.

The above-listed damages can cause some temporary adverse water quality effects, and some short-term losses of the District's water supplies in extreme cases. Of greater concern to overall water quality are flood and precipitation related damage occurrences. These could cause longer term adverse water quality impacts such as excessive runoff and loading of surface contaminants (such as livestock manure, petroleum products, pesticides, and mineral wastes).

The District does not monitor runoff from pastureland or rangeland for pesticides in the watershed. The District has in the past monitored the raw water influent into its potable water treatment plants, which is representative of supply used for agricultural irrigation. A review of the treated water monitoring at the District's water treatment plants shows that there were no detections of the herbicides or pesticides tested for in the Yuba/Bear River water supply. Triclopyr (systemic, foliar herbicide) is not regulated in drinking water; therefore, there is no monitoring data available for this constituent in the treatment plant monitoring data (Starr Consulting et al., 2017). Annual ranges for raw water quality monitoring (coliform and E.coli) at the District's water treatment plant intakes is summarized in Table 4-~~5~~6.

Table 4-~~5~~6. (DWR Worksheet 36) Surface Water Supply Quality

Parameter	Units	2016		2017		2018		2019		2020	
		Min	Max	Min	Max	Min	Max	Min	Max	Min	Max
Coliform	MPN/100 ml	0	>2,419.2	11	14,136	3.1	19,863	6.3	24,196	0	5,475
E.coli	MPN/100 ml	0	1,986.3	0	1,732.9	0	9,804	0	6,488	0	613.1

Source: NID 2019 Consumer Confidence Reports

Table 4-~~6~~ 7 lists the 303(d) listed water bodies in the watershed per the State Water Board 2016 listing. As expected from the region's mining history, mercury and copper constitute the majority of the listed pollutants.

Table 4-~~6~~7. 303(d) Listed Water Bodies

Name	Pollutant
Combie Lake	Mercury
Coon Creek (from confluence of Orr and Dry Creeks to East Side Canal)	Ammonia as N, Total
Deer Creek (Above Scotts Flat to Confluence of Deer Creek, North and South Forks)	pH
Deer Creek (Deer Creek Reservoir to Lake Wildwood	Indicator Bacteria; Mercury; pH
Lake Wildwood	Mercury
Little Deer Creek	Mercury; pH
Rock Creek	pH
Rollins Reservoir	Mercury
Scotts Flat Reservoir	Mercury
South Fork Yuba River (Headwaters to Spaulding Lake)	Copper; pH
Squirrel Creek	Indicator Bacteria
Upper Bear River (Rollins Lake to Camp Far West Reservoir)	Mercury
Wolf Creek	Indicator Bacteria

4.6.2 Groundwater Supply Quality

The District does not utilize groundwater as an existing or planned source of water due to limited groundwater availability and no groundwater aquifer per California Department of Water Resources Bulletin 118. The District does not monitor groundwater quality.

4.6.3 Recycled Water Quality

All wastewater treated within the District service area is treated under the State discharge permit system. Wastewater treatment is the responsibility of each respective wastewater treatment agency, as NID does not provide wastewater services. Assuming the treatment agencies are meeting their permit requirements, the effluent water quality is sufficient to be comingled with NID's supplies in the respective creeks, and diverted for use in NID's agricultural irrigation system. NID maintains close coordination with each wastewater agency so that NID can be notified of any potential effluent water quality issues.

4.6.4 Drainage from Service Area Quality

Drainages near agricultural lands and at points above the Sacramento River Basin are monitored for water quality parameters by the local agricultural water coalitions under the Sacramento Valley Water Quality Coalition (SVWQC). SVWQC reports the water quality data and analysis directly to the Irrigated Lands Regulatory Program of the Region 5 Central Valley Regional Water Quality Control Board. The Placer/Nevada/South Sutter/North Sacramento (PNSSNS) Watershed Coalition is the local agricultural organization that monitors water quality as it relates to agricultural production and discharges in the District's service area. The District does not monitor the water quality of outflow from the service area as the SVWQC is the responsible reporting entity under the Irrigated Land Regulatory Program

4.7 Source Water Quality Monitoring Practices

The District uses the irrigation raw water supply to also supply its potable water treatment plants. In addition to regularly conducting treated water quality monitoring, the District also monitors source water for coliform and E.coli. As summarized in the 2017 Watershed Sanitary Survey, the source water quality is extremely good as the watershed is relatively remote and at low risk of extensive contamination. However, there are emergency events that could impact source water quality. NID does conduct site-specific monitoring in response to known contamination events.

The source water is regularly sampled as part of the Watershed Sanitary Survey. The 2017 Survey raw water monitoring program aimed at assessing the Yuba and Bear Rivers' source water quality (Starr Consulting et al., 2017). Source water quality samples were monitored at various locations and frequencies. Parameters included turbidity, E. coli, Total Organic Carbon (TOC), and daily temperature (limited to Loma Rica WTP). Table 4-~~7~~ 8 presents the District's water quality monitoring practices.

Table 4-~~7.~~8 (DWR Worksheet 38) Water Quality Monitoring Practices

Water Source	Monitoring Location	Measurement/Monitoring method or practice	Frequency
Various throughout the watershed	Various throughout the watershed	Determined by the watershed sanitary survey monitoring program	The watershed sanitary survey is updated every 5 years
Determined by location of contamination incident	Determined by location of contamination incident	Determined by type of contamination incident	Determined per event
Lake Spaulding[1] (via Banner Cascade Pipeline)	Loma Rica WTP E. George WTP	Turbidity, E. coli, TOC, Temp.[2]	Quarterly, Monthly, Bi-Monthly, Daily[2]
Deer Creek [1] (downstream of Scotts Flat Reservoir)	Lake Wildwood WTP Smartsville WTP	Turbidity, E. coli, TOC	Quarterly, Monthly
Rollins Reservoir[1] (via Bear River Canal)	N. Auburn WTP	Turbidity, E. coli, TOC, Temp.	Quarterly, Monthly
Bear River[1] (downstream of Rollins Reservoir)	Lake of the Pines WTP	Turbidity, E. coli, TOC, Temp.	Quarterly, Monthly

[1]Watershed Sanitary Survey (Starr Consulting et al., 2017)

[2]Loma Rica WTP only

5 Water Budget

10826(c). Include an annual water budget based on the quantification of all inflow and outflow components for the service area of the agricultural water supplier. Components of inflow shall include surface inflow, groundwater pumping in the service area, and effective precipitation. Components of outflow shall include surface outflow, deep percolation, and evapotranspiration. An agricultural water supplier shall report the annual water budget on a water-year basis.

Information on the development of the District's water budget is presented in this section. For each component included in the annual water budget, a description on the quantification of each is provided. NID's Water Management Objectives are presented. An estimate of the quantification of efficiency for agriculture water is presented.

5.1 Quantifying Inflow Water Supplies

The water budget presented includes surface inflow, groundwater pumping, and effective precipitation. Each subsection below presents the development and assumptions for each inflow component.

5.1.1 Surface Water Inflow

Surface water inflow is the raw water supply diverted into the raw water canal system. The District measures each diversion point. The majority of the raw water is then served to irrigation customers. The District maintains the flow diversion volumes and submits annual reports to the California State Water Resources Control Board. The majority of the District's irrigation customers are served water through a service box with orifice based on the miner's inch. The District's canal operation strategy emphasizes maintaining constant head in the canals to maintain consistent flow rates through the delivery boxes. The volume of agricultural water delivered is calculated using the flow-rate (miner's inch) and delivery duration period. It is recognized orifice-based metered delivery systems are less accurate than other turbine or ultrasonic type metering systems to measure and quantify deliveries. Converting the agricultural farm gate delivery mechanism to a metering systems that utilizes enclosed, pressure pipe methods will be an extensive and costly process that NID has yet to implement. Surface water inflow to the District's canal system is presented in Table 5-1.

5.1.2 Groundwater Inflow

As indicated throughout this document, NID does not provide groundwater supply. There is no DWR Bulletin 118 identified groundwater basin, but there is a fractured rock groundwater system. This fractured groundwater system is utilized for low producing domestic wells in the service area (USGS, 1984). NID is not aware of any agricultural irrigation customers using groundwater for agricultural irrigation. For this analysis, it is assumed any groundwater that may be used for agricultural irrigation is negligible compared to the total raw water supplied, and therefore groundwater inflow is assumed as zero for the water balance.

Tracking and quantifying of fractured rock private well groundwater use would benefit NID's ability to manage its water resources and support its customers. However, groundwater wells are currently regulated at the county government level, not by NID. The District will investigate options to partner with each respective county in the service area to further enhance private well groundwater usage understanding.

5.1.3 Effective Precipitation

The Draft AWMP Guidebook defines effective precipitation (EP) as the estimate of the amount of precipitation consumed by the crop. "A Proposed Methodology for Quantifying the Efficiency of Agricultural Water Use: A report to the Legislature, pursuant to §10608.64 of the California Water Code,

May 8, 2012" presents detailed methods to calculate agricultural water use efficiency, including effective precipitation. Other models also exist including CalSIMETAW, CUP Plus, and SIMETAW. These detailed methodologies require significant field-specific inputs such as soil characteristics and depth, crop types, irrigation areas and strategies, root system characteristics, agronomic practices, micro and macro climate factors, field runoff, and others. While these models and methodologies would be beneficial for NID's use, the detailed input data required for the models is not yet available for the NID service area. Not only is effective precipitation challenging to model, it is also challenging to estimate due to the wide variances in topography, climatic conditions, cropping types, and agronomic practices within the District's service area.

The body of data regarding agricultural use consists of the self-reported cropping surveys that are limited to crop type and estimated acreage for the irrigation season (April 15 – October 14). There is no crop type or acreage data available for Fall/Winter deliveries. A methodology commensurate with the available data and data quality is used to estimate effective precipitation as described below.

The EP methodology employs the Food and Agricultural Organization's (FAO) estimation method which apportions a percentage of the total monthly rainfall as the EP (Brouwer and Heibloem, 1986). The method is used when information on rainfall reliability, topography, soil texture and structure, depth of root zone, and prevailing soil type is generally unknown (Brouwer and Heibloem, 1986), as is the case for much of the District's service area.

EP is estimated for water years 2016 -2020 using average precipitation data from four weather stations for each year; Auburn, Colfax, Grass Valley, and Nevada City. The monthly precipitation totals for each site are averaged into a monthly precipitation (National Oceanic and Atmospheric Administration – California Nevada River Forecast Center (https://www.cnrfc.noaa.gov/). Average precipitation is input into the FAO formula to estimate the EP, which is then multiplied by the irrigation season acreage and Fall/Winter estimated acreage area to estimate total EP in acre-feet. The calculations are presented in Appendix H and ~~R~~results are reported in Table 5-1. The estimated accuracy of this calculation is +/- 25 percent due to numerous assumptions included in the calculation.

5.2 Quantifying Service Area Outflows

The water budget presented includes crop consumptive use, outflow, and deep percolation. Each subsection below presents the development and assumptions for each outflow component.

5.2.1 Crop Consumptive Use (CCU)

The crop consumptive use of applied water (CCU) is estimated using specific crop evapotranspiration rates published by the Irrigation Training and Research Center, California Polytechnic State University, San Luis Obispo. Based on the geographical location, the District's service area is associated within Zone 13. The calculations are presented in Appendix H and ~~CCU is included as an outflow in the water budget and is~~results are presented in Table 5-2. The estimated accuracy of this calculation is +/- 25 percent due to numerous assumptions of crop acreage, consistent evapotranspiration rates, and crop types included in the calculation.

5.2.2 Surface Outflows

As presented in Section 4.2, drainage and outflow within the NID service area is not measured. NID does not maintain a drainage collection system and any surface runoff flows into the natural drainage waterways. The gravity canal delivery system is designed to spill at the end points in order to maintain proper water elevation on customer service boxes. Most of these spills are upstream of another NID diversion structure, and therefore assumed to be diverted back into the canal system. NID does measure canal spills at the end of the system, where spills then flow out of the service area. These measured spills are the estimated outflow volumes. Therefore the outflow volume does not include other drainage or

rainfall event drainage during the non-irrigation season. Estimated surface outflows are presented in Table 5-2.

5.2.3 Deep Percolation Outflows

The subsurface characteristics throughout the service area can vary from bedrock to shallow alluvium (USGS, 1984), creating varying conditions of direct runoff, percolation into rock fractures, and subsurface drainage to watercourses. The District does not measure or track agricultural field runoff, nor maintain detailed field subsurface conditions or irrigation practices for each customer, complicating development of irrigation percolation estimates.

As the purpose of quantifying percolation in this AWMP is to differentiate and identity water volumes necessary to serve irrigation water to meet irrigation requirements, the District includes canal seepage in this category. It is assumed the water lost from the canals due to seepage either percolates into fractured rock fissures or into nearby shallow alluvium, and is lost to the canal system. The District has estimated canal seepage in the Raw Water Master Plan at 15 percent of total canal flow. Estimated deep percolation outflows are presented in Table 5-2.

5.2.4 Municipal and Industrial (raw)

As indicated in Section 3.4, NID provides municipal and industrial raw water to other entities. The raw water deliveries from the canal system are presented in Table 3-6 and are quantified as an outflow in the water budget. The raw water is diverted by the District for subsequent delivery to the City of Grass Valley, Nevada City, Nevada City School of Arts, and Placer County Water Agency. Municipal and industrial raw water deliveries are included in Table 5-2.

5.2.5 Treated System

Portions of the raw water flows are diverted from the canal system into NID's water treatment plants. These diversions are metered at the treatment plant's raw water intake and are included as an outflow in the water budget. Raw water deliveries to the District WTPs are included in Table 5-2.

Table 5-1. Quantification of Service Area Inflows

Inflow Component	How Quantified?	2016 AFY	2017 AFY	2018 AFY	2019 AFY	2020 AFY
Effective Precipitation	Estimated	6,312	17,509	8,495	13,775	13,580
Water Supplier surface water diversions	Measured	133,682	136,219	144,786	141,482	152,947
Water supplier groundwater pumping	Measured	0	0	0	0	0
Private groundwater pumping	Estimated	0	0	0	0	0
Total:		139,994	153,728	153,281	155,257	166,527

Table 5-2. Quantification of Service Area Outflows

Outflow Component	How Quantified?	2016 AFY	2017 AFY	2018 AFY	2019 AFY	2020 AFY
Evapotranspiration (Crop Consumptive Use)	Estimated	95,015	88,226	98,501	90,051	104,240
Surface Outflows[1]	Measured	3,030	4,680	5,168	4,785	3,696
Deep Percolations	Estimated	20,052	20,433	21,718	21,222	22,123
M&I (raw)	Measured	5,232	6,116	6,086	5,413	6,200
Treated System	Measured	8,942	9,752	10,061	9,269	10,537
Total:		132,271	129,207	141,533	130,740	147,615

[1] For measured sites only.

5.3 Identify Water Management Objectives

10826(f). Identify water management objectives based on the water budget to improve water system efficiency or to meet other water management objectives. The agricultural water supplier shall identify, prioritize, and implement actions to reduce water loss, improve water system management, and meet other water management objectives identified in the plan.

The District is at the crossroads of a unique opportunity. Water management throughout the State of California is shifting, with urban, agricultural, environmental, and social interests all working to reimagine water resources management priorities and responsibilities. Being situated at in the headwaters of the watershed that supplies the majority of the state, NID's water resources are highly valuable to downstream interests throughout the state. As stated in the District's adopted Strategic Plan Goal #3, NID will develop and manage its resources in a self-determining manner that protects and provides local control of the water supply. NID is taking this opportunity in water management shifts to locally develop the vision and water resource needs for its community. Plan for Water is NID's ongoing effort to develop this community-focused vision and subsequent strategies for implementation. Plan for Water will identify the community's need for water resources within the context of community visioning. Alternative strategies and projects will be developed and compared to support an ongoing strategy and implementation plan for policy decisions, management enhancements, operational modifications, infrastructure requirements, and others as identified. The Plan will identify triggering points and re-analysis updates in order to maintain current and responsive to future scenarios.

Commented [jc1]: Taken from the Board policy document

The Plan for Water provides the overarching long-term strategy for the District. To support the strategy, the District will need enhanced data collection and data analytics to inform decision making and track implementation progress. There are also new or pending regulations that will require enhanced data analytics such as water budget assignment by State and FERC license monitoring requirements. The following lists efforts NID will implement in the near future to enhance its water management capabilities:

1. Continue to evaluate and implement as feasible options to increase understanding of agricultural irrigation customer water uses and field characteristics. Crop type and irrigation area currently self-

Commented [jc2]: This was addressed in Board meeting that language allows NID to develop a specific plan outside of this AWMP to modify and update as issues arise.

reported. NID will investigate means and methods to improve accuracy and validation of irrigation customer practices, including available aerial imagery~~.~~

2. Continue to evaluate and implement as feasible options to increase measurement accuracy. NID irrigation customers are mostly served through the miner's inch orifice distribution box. NID will investigate methods to improve the measure accuracy and temporal patterns to better quantify individual customer use.

3. Continue to evaluate and implement as feasible options to increase canal water balance accuracy. NID will investigate options to increase flow measurement throughout its canal system to allow refined understanding of water in, water out, and seepage.

4. Investigate land use and latent water demands within the service area as part of the Plan for Water process. NID only serves a portion of the parcels within its service area. Many unserved parcels are either undeveloped or use private domestic groundwater wells. Should wells fail, or parcels be developed, NID would provide service. This latent demand needs better quantification in order to improve understanding of potential future demands.

5. Reduce water demands. NID will continue to implement its conservation programs and demand management measures for agricultural and treated water customers. NID will investigate new programs as identified and modify the conservation program offerings as selected. On the treated water side, DWR and the State Board will soon be enforcing water budgets for indoor use and landscape irrigation. NID will develop the necessary data analytics to support the management and water demand reporting requirements.

6. Resource Stewardship. NID will continue its watershed management program and practices. NID will investigate new programs as identified and modify the watershed program offerings as selected.

7. Modify water system in step with changing hydrology. The State of California is projecting hydrologic scenarios that portend warmer conditions resulting in less snowpack and more rain. NID's current system relies on the slow melting of the snowpack over the spring and summer to supply irrigation demands. If there is less snow and more rain in the future, NID will need to make operational, facility, or watershed changes to store more of the winter rainfall for use during the irrigation season. The District will continue its efforts to identify future potential changes and evaluate alternatives to address these climate impacts.

8. Fractured rock groundwater system investigations. NID will investigate options to partner with the respective counties in the service are to better understand private well groundwater use and trends to support water accounting and future demand needs.

5.4 Quantify the Efficiency of Agricultural Water Use

10826(h). Quantify the efficiency of agricultural water use within the service area of the agricultural water supplier using the appropriate method or methods from among the four water use efficiency quantification methods developed by the department in the May 8, 2012, report to the Legislature entitled "A Proposed Methodology for Quantifying the Efficiency of Agricultural Water Use." The agricultural water supplier shall account for all water uses, including crop water use, agronomic water use, environmental water use, and recoverable surface flows.

The quantification of the efficiency of the District's water agricultural water use employs Method 1 (Crop Consumptive Use Fraction) from DWR's report to the Legislature entitled, "A Proposed methodology for Quantifying the Efficiency of Agricultural Water Use" (DWR, 2012). Specifically, Method 1 compares the evapotranspiration of applied water (ETAW) with the total applied water (AW) for the reported irrigated acres during 2020. Values for AW are reported as the amount purchased by agricultural

customers, including Fall/Winter customers. Calculations are presented in Appendix H and ~~R~~results are presented in the following Table 5-3.

Table 5-3. (DWR Table D.1) Crop Consumptive Use Fraction (2020)

Evapotranspiration of Applied Water (ETAW)[1] AFY	Applied Water (AW)[2] AFY	Crop Consumptive Use Fraction No units
90,660	109,016	83%

[1]Equal to evapotranspiration (Table 5-2) minus effective precipitation (Table 5-1).

[2]From Table 3-1.

Both ETAW and AW are estimated. Accuracy of crop consumption ratio is unknown.

6 Climate Change

10826(d). Include an analysis, based on available information, of the effect of climate change on future water supplies.

Climate change is increasingly at the forefront of water resource management discussions. This District's snowpack-based supply and delivery strategy could be extensively impacted by changing temperatures and precipitation. As such, the District undertook an analysis of climate change impacts to future supplies. The analysis included projecting future hydrologic conditions and their potential effect on the District's water supplies, specifically watershed runoff. The approach, State and Global Climate Model (GCM) datasets incorporated, assumptions, and results of the analysis are documented in the technical memorandum titled, "Hydrologic Analysis Technical Memorandum – Final Report" (HDR, 2020)~~.~~.

6.1 Climate Change Modeling Results

The modeling and analysis produced hydrologic data sets that represent historic and projected climate change condition for the year 2070 that can be used to quantify how much of the projected watershed runoff is available to be used as District water supply.

Table 6-1 presents the projected 2070 runoff values at four locations in the District's watershed under the various climate scenarios compared to the historical average runoff at each location. Results from the modeling and analysis indicated that changes in runoff volume are not directly proportional to changes in precipitation volume between scenarios. Variation of temperature, rainfall intensity, and rainfall duration impact the projected runoff. The detailed monthly model results also indicated a shifting of runoff to earlier in the year, as is expected with predicted warmer temperatures.

Table 6-1. Percent of Average Annual Historic Runoff

Location	Percent of Average Annual Historical Runoff at Each Location		
	2070 DEW	2070 Median	2070 WMW
Middle Yuba River at Milton Diversion Dam	92%	104%	126%
Canyon Creek at Bowman Dam	92%	104%	125%
Bear River at Rollins Dam	90%	109%	148%
Deer Creek at Scotts Flat Dam	90%	108%	147%

DEW~~M~~ - Drier, extreme warming scenario
WMW - Wetter, moderate warming scenario

The analysis also evaluated runoff projections under drought condition. A five-year historic drought (1987-1991) was input into the hydrology, with results presented in Table 6-2. Note the projected runoff values are solely based on the hydrologic characteristics of the five-year drought selected, and a different five-year period will result in different results. Results indicate the watershed is significantly impacted in this drought condition, with runoff reducing up to 75 percent in the early drought period, and 50 percent in later drought period. The average year 2070 runoff projected in the hydrologic model (383,500 AF) includes additional subbasins that are not included in the Upper Division dataset that lists an average historical runoff of 232,600 AFY in Section 4.1.1.

Table 6-2. Projected Watershed Runoff during Historical Five-Year Drought (1987-1991)

2070 Projected Average Year Runoff, AF	Drought Year 1, AF	Drought Year 2, AF	Drought Year 3 AF	Drought Year 4, AF	Drought Year 5, AF
383,500	97,200	95,200	315,900	158,200	166,700

The annual precipitation as measured at the NID Bowman Lake rain gage from 1987 through 1991 is presented in Table 6-3.

Table 6-3. 1987-1991 Annual Precipitation - Bowman Lake Rain Gage

1987	1988	1989	1990	1991
45.5 in.	49.1 in.	62.4 in.	44.8 in.	54.0 in.

6.2 Climate Change Impacts

The modeling results indicate NID should expect changes to the existing runoff patterns. In addition to NID's own supply and demand impacts, climate change could also affect NID with respect to state-wide needs and local agriculture.

As evidenced by the modeling results, runoff will be affected under the modeled climate conditions. However, the State's water management strategies also rely heavily on snowpack. It is expected similar changes will affect state-wide supplies and operations. Resulting policies, regulations, and legal impacts could likely impact NID's supply availability for local use.

Local climate change impacts will likely affect current supply source options. There are approximately 52,000 parcels in the District's service area. Only approximately 25,000 receive NID treated or raw water. It is assumed the remaining 25,000 parcels are served by fractured rock wells or are undeveloped. A prolonged drought, or increased winter runoff could reduce the amount of water that percolates into the rock fractures, reducing the amount of fractured rock groundwater. This in turn could cause private wells to be insufficient for use. Failing wells will likely cause an increase in the NID customers and subsequent demands, as existing residences will need to connect to the water system. Some of these users may be too far from existing infrastructure making it potentially cost prohibitive to connect, however, the District does expect new customers in the "soft service areas", which are areas near existing infrastructure.

Local climate changes could also affect the community's long-standing agriculture presence. Changing temperatures and precipitation patterns could affect crop types and irrigation demands, open up higher elevations to plantings, affect crop yields, change agronomic practices, and others. Each of these will have an effect on NID supply requirements, operational strategies, and infrastructure requirements.

In addition to supply and demand issues, NID also expects impacts to its other responsibilities. Watershed impacts will affect forest management practices, implementation of the FERC license requirements, and increase catastrophic fire risk. Existing recreation opportunities may be altered or not available under certain conditions. Hydropower generation, which provides significant revenue to the

District, may be shifted into less beneficial market pricing periods. Hydropower generation may also decrease as the normal high revenue summertime generation period may not have the water supply to generate as in the past.

Enhancing climate change resiliency is an important element for all levels of water resources planning across the state. The State is pursuing numerous avenues to quantify potential issues and develop mitigation alternatives. NID will follow these efforts and participate as available. Regionally, groups of agencies and other stakeholders are also addressing these issues and developing mitigation efforts, such as CABY, American River Basin Study, Association of California Water Agencies Headwaters initiatives, and others. Locally, NID is committed to controlling its own water resources in a self-determining manner per its strategic plan. The Plan for Water is NID's vehicle to assess climate change impacts and develop and implement mitigation strategies and modifications to operate within climate change.

7 Water Use Efficiency Information

10608.48(d). Agricultural water suppliers shall include in the agricultural water management plans required pursuant to Part 2.8 (commencing with Section 10800) a report on which efficient water management practices have been implemented and are planned to be implemented, an estimate of the water use efficiency improvements that have occurred since the last report, and an estimate of the water use efficiency improvements estimated to occur five and 10 years in the future. If an agricultural water supplier determines that an efficient water management practice is not locally cost effective or technically feasible, the supplier shall submit information documenting that determination.

The AWMP Act calls for agricultural water suppliers to report on which efficient water management practices (EWMP) they have implemented and plan to implement and to describe the associated water use efficiency improvements. The District's EWMP implementation is described in this section.

7.1 EWMP Implementation and Reporting

The following subsections report on the EWMPs planned, implemented, and improvements that have occurred since the 2015 AWMP. There are two Critical EWMPs that every supplier must implement. There are an additional 14 Conditionally Required EWMPs that should be implemented if cost effective or technically feasible.

7.1.1 Critical EWMPs

1 - **Water Measurement** - All of the District's customer delivery points are measured. Service outlets are checked numerous times per year for accuracy of water delivery. Orifice plates, screens and boards are replaced as necessary. All measurement structures are installed to professional engineering design standards. All structures are checked prior to irrigation season and numerous times during the season as necessary for accuracy by inspecting the levelness and to verify that the staff gages are set to the appropriate level. A standard AA current meter measurement is used to compute flow when necessary. In addition, locking of all irrigation boxes to prevent theft is currently being employed. Implementation of this EWMP is complete and NID will continue to maintain the measuring devices.

2 - **Volume-Based Pricing** - The District's water rates are shown in Appendix D. The uniform water rates are based in part on quantity delivered. The District approves water rates annually based on the cost of service, and consistent with Proposition 218. Implementation of this EWMP is complete, and rates structures are updated on a regular basis per Board direction.

~~7.1.1~~7.1.2 Conditionally Required EWMPs

1 - **Alternate Land Use** - The District is not aware of customers with lands that have an exceptionally high water duty or whose irrigation contributes to significant problems. Some irrigation customers are required by the Central Valley Regional Water Quality Control Board to participate in a water coalition to protect water quality and minimize run-off through EWMPs. The District employs a water waste policy that prohibits excess runoff from a parcel. If a site is identified that is contributing to significant problems, the District will investigate solution options per the EWMP. Budget for implementation of this EWMP over the next 10 years is included in the regular budget for staff costs.

2 - **Recycled Water Use** - The District currently uses recycled water from urban wastewater treatment plants that is discharge to creeks per discharge permit requirements. The discharge is comingled with the District's water and diverted into the canal system. A total of 7,551 acre-feet of water supply was conserved from 2016 through 2020. Pending continued acceptable water quality, the District will continue to utilize recycled water for agricultural deliveries over the next 10 years. Budget for implementation of this EWMP over the next 10 years is included in the regular budget for staff costs.

3 - **Finance On-Farm Irrigation Systems -** This EWMP is not implemented as described in Section 7.4.

4 - **Incentive Pricing Structure** - The District currently has incentive pricing with volumetric uniform water rates that provide motivation to use water efficiently. The District's pricing consists of a combination of fixed charge (a constant fee assessed to customer) and a water rate (a price per unit of water delivered). The District's pricing structure promotes more efficient use of water at the farm level. Implementation of the EWMP is ongoing, with rates updated as determined by the Board. Budget for implementation of this EWMP over the next 10 years is included in the regular budget for staff costs.

5 - **Infrastructure Improvements** - The District lines and encases canal sections annually. The District also applies for grant funding when applicable. The benefit-cost ratio for this EWMP is low due to the cost per mile to gunite canals (a minimum of $125,000/mile). Even though some herbicide and soil erosion control costs may decrease by canal lining, cleaning silt and debris costs increase. In the last five years, the District has spent over $40 million on encasement and realignment of distribution lines and canals. Recent budgets have allocated over $1 million per year in raw water infrastructure and system improvements. Implementation of the EWMP is ongoing. Pending available funding, the District will continue to allocate $1 million annually for the next 10 years. Staff costs for capital projected implementation are included in the regular budget for staff costs.

6 - **Order/Delivery Flexibility** - The District's licensed distribution operators work with customers on an individual basis for canal rotations and delivery flexibility. In addition, the District allows for proration of account if service is impacted or for requested demand water. Implementation of the EWMP is ongoing and is expected to continue for the next 10 years. Staff costs for this practice are included in the regular budget for staff costs.

7 - **Supplier Spill and Tailwater Systems** - Tail water from higher elevation canals is recaptured in lower elevation canals due to the change in elevation of the extensive distribution system. The District has the right to resell return flows within the District boundaries. Therefore, this water is being recovered and utilized during the irrigation season. The District utilizes 15 automated gaging and telemetry stations within the canal system to increase efficiency and minimize spills. Implementation of the EWMP is ongoing. The District plans on increasing the measurement sites at non-recapturable end points, adding up to 10 sites over the next 10 years, assuming budget availability. The costs for these sites is included in the infrastructure improvement EWMP budget of $1 million per year.

8 - **Conjunctive Use** - Not applicable as only fractured rock groundwater is present in the service area.

9 - **Automated Canal Controls** - The District researched automation of canal structures, where applicable, for design, efficiency, and feasibility. Automatic gate control devices were installed at two of the District's large capacity canals. If feasible, the District will incorporate automation and/or telemetry into canal structures at the time of replacement. Implementation of the EWMP is ongoing. The District plans on installing up to 10 ~~automated~~ real-time monitoring~~control~~ stations over 10 years. The costs for these sites are included in the total infrastructure improvement EWMP budget of $1 million per year.

10 - **Customer Pump Test/Evaluation** - Not applicable. The District is not aware of any private groundwater customer wells used for irrigation.

11 - **Water Conservation Coordinator** - Since 2011, a full time water efficiency coordinator develops and coordinates educational programs, including fairs and events, irrigation workshops, customer surveys, newsletters, website information, demonstration gardens, and landowner site visits. The coordinator also provides customers with information on local cost-share and technical assistance programs. In addition, the District offers multiple programs including rebates, mulch giveaways, irrigation workshops, large landscape projects, and school presentations. Implementation of the EWMP is ongoing. Implementation

of this EWMP is complete and NID will continue to maintain the conservation coordination position and duties at a budget estimate of $100,000 per year for the next 10 years.

12 - **Water Management Services to Customers** - The District provides information and education to customers via the District's website (www.nidwater.com), inserts into the customer's bills, pamphlets and brochures, and an onsite Demonstration Garden. Throughout the year the District provides irrigation efficiency workshops that are free to customers, as well as free seminars and other events which promote water use efficiency through Best Management Practices. Further, the District responds to water waste reports and currently has a "Report Waste" link on their website. The District provides educational material and information on cost-share incentive programs that are offered by other agencies.

The District works closely with local and regional resources such as the USDA Natural Resource Conservation Service (NRCS) and Resource Conservation Districts (RCDs), University of California (UC) Cooperative Extension Farm Advisors, UC Certified Master Gardeners, and local county agricultural commissioners to provide customers with technical assistance and new advances in best management land practices, BMPs for herbicide use, conservation measures for environmental habitat, and the efficient use of water.

Implementation of the EWMP is ongoing and is expected to continue for the next 10 years. Staff costs for this practice are included in the regular budget for staff costs.

13 - **Identify Institutional Changes** - The District has riparian rights and pre- and post-1914 water rights for most of its water supply. The District's Board of Directors has the legal authority to directly set and implement policies that affect the distribution of water. The District evaluates its policies, rules, and regulations regularly to address regulatory and other changes. For the small portion of supply from the District's contract with PG&E, additional flexibility in timing and location of purchased water was incorporated into the recent PG&E agreement renewal.

Implementation of the EWMP is ongoing and is expected to continue for the next 10 years. Staff costs for this practice are included in the regular budget for staff costs.

14 - **Supplier Pump Improved Efficiency** - The District does not pump from groundwater and most of the distribution system is gravity flow. In a few isolated cases, 100-150 hp pumps lift water a short distance to a nearby reservoir. The pumps are inspected daily and any debris is removed. All pumps are inspected annually and are on an annual maintenance schedule to ensure efficient operations. The District replaces inefficient pumps as grant funding and/or budget is available. Implementation of this EWMP is ongoing. It is anticipated that the District will conduct two pump efficiency tests (and subsequent replacement based on available grant funding), during the next five and 10 years. Budget for testing is included in the regular operations budget, with identified replacement needs to be funded through budget and/or grants.

Table 7-1 presents the District's additional raw water system delivery improvements over the last five years.

Table 7-1. NID Raw Water System Infrastructure Efficiency Improvements (2015-2020)

Improvement	Location/List
New Gaging Stations	Riffle Box Canal at End Grove Canal at End Wolf Hanaman Canal at End Kyler Canal at Head Rock Creek Intertie Station Flow Meter for the DS Pumps
Replaced/Improved Gaging Stations	Red Dog Canal at Head Kilaga Springs Canal at Head Woodpecker Canal at Head Sazarac Canal at Head Oest Canal at Head Sanford Struckman H-Flume at Head Tarr at Hog Chute Gage Station Bowman Spaulding Canal at Head Allison Ranch at End
Telemetry – Real Time Data	Wilson Creek Diversion Ogee weir on Deer Creek DS Canal at Head Newtown Canal at Head Tunnel Canal at Head Tarr Canal at Head Chicago Park Canal at Head Loma Rica Reservoir Combie Phase I at Head Combie Ophir I at Head Gold Hill Canal at Head Camp Far West Canal at Head Auburn Ravine I Canal at Head Hemphill Canal at Head China Union Canal at Head
Canal Lining and Encasement	Bowman Spaulding Canal - 1,325 LF Chicago Park Canal – 280 LF Maben Canal Phase 1-3 – 5,320 LF Newtown Canal – 1,470 LF Combie Phase 1 – 8,900 LF
Canal Repairs	Shotcrete Canals - 7,700 Feet Encased canals (Due to leakage) – 18,740 Feet Repaired Canal leaks – 867 Repaired Reservoir Leaks – 3 (Alta Hill / Ruess 2 x's) Shotcrete Reservoirs – 1 (Ruess 2x's) Pipes Replaced (Over Shots / New Structures) – 220 Feet

Improvement	Location/List
	Berms Repaired (Downed Tree / Leaks / Up-Graded / Storm Damage) - 16, 050 Feet Repaired Control Structures – 2 (Gold Hill II - Head / Markwell – End)
Other Improvements	Installed Snowfox and monitoring equipment for real time snow data

Table 7-~~1~~ 2 presents the District's schedule, finance plan, and budget to implement the EWMPs.

Table 7-~~1~~2. (DWR Table VII.A.3) Schedule to Implement EWMPs

EWMP No.	Implementation Schedule	Finance Plan	Annual Budget Allotment
Critical 1 - Water Measurement	Completed	Rates~~N/A~~	Included as part of larger operations budget
Critical 2 - Volume-Based Pricing	Ongoing/Completed	~~N/A~~Rates	Included in various staff salaries budget allotment
1 – Facilitate alternative land use changes	Ongoing	~~N/A~~Rates	Included in various staff salaries budget allotment
2 - Recycled Water Use	Ongoing	N/A	No cost for recycled water supply
4 - Incentive Pricing Structure	Ongoing	Rates	$50,000 (Proposition 218 process/education per rate case)
5 - Infrastructure Improvements	Ongoing	Rates	$1 million
6 - Order/Delivery Flexibility	Ongoing	Rates	Included as part of larger operations budget
7 - Supplier Spill and Tailwater Systems	Ongoing	Rates	Included in EWMP No. 5 budget allotment
9 - Automated Canal Controls	Ongoing	Rates	Included in EWMP No. 5 budget allotment
11 - Water Conservation Coordinator	Ongoing	Rates	$100,000
12 - Water Management Services to Customers	Ongoing	Rates	$50,000
13 - Identify Institutional Changes	Ongoing	Rates	Included in various staff salaries budget allotment
14 - Supplier Pump Improved Efficiency	Ongoing	Rates/Grants	Included as part of larger operations budget
Grand Total all EWMPs			$1.2 Million[1]

[1]Grand total budget allotment for implementation of EWMPs is over $1.2 million. Staff labor and regular operational budget are not quantified in this total.

7.2 Critical EWMPs

The District implements the mandatory Critical EWMPs: No. 1, Water Measurement, and No. 2, Incentive Pricing Structure. A description of how the critical EWMPs are implemented by the District is provided in Section 7.1. Additional background information is provided below.

7.2.1 Critical EWMP No. 1 – Water Measurement

All of the District's customer delivery points are measured. The majority of the District's irrigation customers purchase summer season water, April 15 through October 14; the typical duration of water delivery is 182 days. The standard measurement for a miner's inch requires a six-inch head of water over the center of the orifice and the water to free flow through the delivery point. For customers that purchase 40 miner's inches or less, the amount of water is delivered through a standard water box and measured through an orifice sized for the amount of water purchased and the available head pressure. For purchases greater than 40 miner's inches, the measurement may be by any industry standard device such as a weir or Parshall flume that will give the most accurate measurement for the situation. The customer's water boxes and orifice plates are checked at the beginning of irrigation season and periodically throughout the season for accuracy. Records are kept stating when customer services are turned on and off to assist in calculating the volume of water delivered. Volume is calculated as follows:

$$\text{Volume} = \text{Flow} \times \text{Duration}$$

Where,

Flow = miners inch delivered converted to flow rate based on orifice

Duration = Time of water service/delivery

7.2.2 Critical EWMP No. 2 – Incentive Pricing Structure

All water rates are determined on a cost of service basis, consistent with Proposition 218, and are reviewed annually. Raw water rates are a uniform volumetric charge, consisting of a combination of fixed charge (a constant fee assessed to customer) and a water rate (a price per unit of water delivered). Raw water is sold by quantity in increments of either miner's inches or acre feet. The District has several rate schedules for raw water depending on the type of service provided. Similar to the rates, the District also has several billing frequencies depending on the type of service. For a seasonal irrigation service, the customer has the choice of paying the amount in full or making payments in three installments. Most of the raw water customers purchase water for the summer irrigation season (April 15 to October 15). The current District water rates are provided in Appendix D.

7.3 Conditional EWMPs

The District continues to implement cost-effective or technically feasible conservation measures including, but not limited to, the practices described in Section 7.1. All of the applicable Conditional EWMPs are being implemented with the exception of No 3, On Farm Capital Improvements. Some irrigation customers are required by the Central Valley Regional Water Quality Control Board to participate in a water coalition to protect water quality and minimize run-off through efficient water management practices.

7.4 Documentation for Non-Implemented EWMPs

The efficient water management practices that the District has determined are not locally cost effective or technically feasible are listed in Table 7-~~2~~3.

Table 7-~~2~~3. (DWR Table VII.A.4) Non-Implemented EWMP Documentation

EWMP No.	Description	(check one or both)		Justification and/or Documentation
		Technically Infeasible	Not Locally Cost-Effective	
3	On-Farm Irrigation Capital Improvements		X	The District provides information and resources to customers for local, state and federal cost-share and technical assistance programs such as the USDA Natural Resource Conservation Service EQIP, local RCDs and UC Cooperative Extension Farm Advisors. It is not locally cost effective for the District to finance capital improvements to agricultural customers because due to the District's water rights and supply infrastructure fixed costs, there are no incremental cost savings from potential local on-farm capital improvements.

8 Supporting Documentation

The Agricultural Water Measurement Regulation applies to water suppliers that serve more than 25,000 acres (excluding recycled water), and requires that water measurements be conducted at the farm-gate of a single customer and that measurement devices are certified as accurate through field-testing, laboratory/engineer certification, or inspection. In this section the term "delivery point" is used in place of the term "farm-gate" to be consistent with the District's terminology for the location at which the District transfers control of the delivered water to the customer.

8.1 Legal Certification and Apportionment Required for Water Measurement

The District can measure water at the delivery point for all customers and therefore does not need to submit legal certification and apportionment required for water measurement. This DWR AWMP Guidebook Attachment A requirement is not applicable to the District. There are no legal constraints to installing or operating water meters for any of the District's customers.

8.2 Engineer Certification and Apportionment Required for Water Measurement

The District can measure water at the delivery point for all customers. Therefore, the District does not need to submit engineer certification and apportionment required for water measurement. This DWR AWMP Guidebook Attachment B requirement is not applicable to the District. There are no physical constraints at the delivery points that prevent the installation or operation of water meters for any of the District's customers.

8.3 Description of Water Management Best Professional Practices

This section provides a description of the Best Professional Practices about the collection of water measurement data, frequency of measurements, method for determining irrigated acres, and quality control and quality assurance procedures.

8.3.1 Water Measurement Data Collection

Water measurement data are collected based on orifice plate settings for the duration of the customers purchase, either seasonally (from April 15 to October 14) or annually. As needed and if requested, the District will review, test, and evaluate the measuring device and its ability to provide the water accurately to the customer. Appendix G contains a memorandum from the District's interim engineering manager stating that the District's current methods of measuring customer deliveries meets raw water measurement best management practices under California Code of Regulations Section 597.2.

8.3.2 Measurement Frequency

Each customer is provided an orifice size which continuously measures the amount and limits the maximum amount of water at specific conditions. The orifice size is set on a regular basis per the respective ordered water supply.

8.3.3 Method for Determining Irrigated Acres

The District sends out a Crop Acreage Report form annually for the customer to report the irrigated acreage and types of crops with the application for water. The type of information required to be provided by the customer is:

1. Crops grown and irrigated acreage by crop type
2. Total acreage

8.3.4 Quality Control/Assurance Procedures

Information provided by the customers on the Application for Water and Crop Acreage report form sent out annually by the District is cross-checked by the District against prior reports and the total amount of acreage owned. If necessary, the District contacts the customer for clarification of the data submitted and/or conducts a site visit.

8.4 Documentation of Water Measurement Conversion to Volume

The orifice measurement is based on the miners inch. The District makes every reasonable effort to set the orifice to the proper head and allow free flow through the orifice and assumes 1 miners inch equals 1.5 cubic feet per minute. The size of the orifice (defining quantity of miners inch) along with the delivery duration (in days) is used to convert the water measurement to volume. Duration is based on the customer order, which is usually for the entire irrigation season. In the event a customer requests a shutoff, turn on, or Fall/Winter delivery, these durations are factored into the duration total.

8.5 Device Corrective Action Plan Required for Water Measurement

Orifices used for customer delivery are checked at a minimum of twice a year for proper sizing, adequate head pressure, and condition of the service point. Flowmeters are included in a maintenance management program and are inspected annually and calibrated according to manufacturer recommendations.

Field checks on canal measuring stations occur three to four times per year. This continual verification allows the District to maintain proper and accurate measurement records (Teledyne, 2016 and USBR, rev. 2001). Open channel flow sites are inspected to ensure structures are plumb, staff gages are level with flume floors and weir crests, approach flows are laminar, and that no backwater conditions exist in the tailrace of the structures. Current meters are used as a secondary verification to confirm the volume of flow.

8.6 References

Brouwer, C. and Heibloem, M. *Irrigation Water Management: Irrigation Water Needs*. 1986.

Brown and Caldwell. *2015 Agricultural Water Management Plan*. January 2016.

CABY. *Integrated Regional Water Management Plan 2020 Update* [PUBLIC REVIEW DRAFT]. 2020.

California Department of Water Resources (DWR). *A Guidebook to Assist Agricultural Water Suppliers to Prepare a 2020 Agricultural Water Management Plan* [DRAFT]. August 2020.

California Department of Water Resources (DWR). *A Proposed Methodology for Quantifying the Efficiency of Agricultural Water Use*. May, 2012.

HDR. *Hydrologic Analysis Technical Memorandum – Final Report*. November 2020.

Starr Consulting and Palencia Consulting Engineers. *Yuba/Bear River Watershed Sanitary Survey, 2017 Update*. January 2017.

Teledyne ISCO Open Channel Flow Measurement Handbook, Eighth Edition (Teledyne). 2016.

United States Department of the Interior, Bureau of Reclamation (USBR). *Water Measurement Manual*. Revised 2001.

United States Geological Survey (USGS). *Ground-Water Conditions and Well Yields in Fractured Rocks, Southwestern Nevada County*. 1984.

Nevada Irrigation District

Agricultural Water Management Plan

Appendices

~~Public Hearing~~ Draft Final
~~March 24, 2021~~ April 14, 2021

Appendix A: Public Outreach and Review

- Public Review Comments and NID Response
- City/County Notification
- Copy of Notice of Public Hearing – to *be inserted for final*

Nevada Irrigation District
Response to Public Comments to the
2020 Agricultural Water Management Plan

RESPONSE TO COMMENTS THAT DID NOT RAISE A SPECIFIC ISSUE WITH THE AGRICULTURAL WATER MANAGEMENT PLAN.

Nevada Irrigation District acknowledges and appreciates the time and thought that went into each comment letter submitted during the public review and comment period for the Agricultural Water Management Plan. All of the comment letters received for the draft AWMP have been incorporated into the public record for the AWMP, which will be considered when the Board of Directors deliberates regarding whether to approve the AWMP.

NID has provided unique responses to each comment that pertain to specific issues within the AWMP document. However, some comment letters do not comment on any of the specific analyses or provisions of the AWMP, nor do they pertain to the accuracy or adequacy of the document overall. NID is deferring responses to the more general observations contained in the comment letters listed below to a more appropriate forum, such as the Plan For Water review.

From: Keith Lorah
To: NID Info
Subject: Centennial Dam
Date: Monday, March 15, 2021 3:20:08 PM

I am in agreement with SYRCL about the proposed Centennial Dam. There statements read in part:

SYRCL has been concerned about recent data and modeling in NID's Water Planning Projections because they were incomplete and seemed to inflate demand. It is unclear to what extent the Water Planning Projections informed the AWMP.

SYRCL was disappointed that NID chose to cancel both the public meetings on March 3 and 4, 2021 at the last minute and instead defer discussion to a regularly scheduled Board Meeting this Wednesday, March 10, 2021, where less public engagement is possible due to a busy Board agenda and workday time.
SYRCL was also disappointed to see that NID is only accepting written public comment until March 16, 2021. This only gives the public two weeks to review and comment on the Plan, which is not enough time to fully understand what is in the Plan and meaningfully engage. Additionally, this comment deadline prevents inclusion on the formal record of any public comment made during the formal public hearing on March 24, 2021.

SYRCL believes NID should:

- Give the public additional time to review the Plan,
- Include comments in the final Plan from the March 24, 2021 Public Hearing, and
- Publish an explanation that states to what degree the Water Planning Projections were included in the Plan.

NID Response to:

Keith Lorah

The Water Planning Projections are a suite of technical memoranda that were published by NID in Summer, 2020. Public meetings were conducted to describe each respective memorandum and receive questions and comments. The hydrologic model is based on the FERC licensing approved model, with the updated model reviewed by State Department of Fish and Wildlife. In addition, extra climate change modeling runs were conducted as requested by public to include different drought assumptions. The NID website presents all the technical memorandum and additional modeling results, explanation of the planning projections, a glossary, frequently asked questions, and responses to the public's questions identified during the outreach process. The Water Planning Projections are the beginning of the Plan for Water process and there is continued opportunity for discussion and update of the planning assumptions during Plan for Water.

The AWMP reports past customer sales, other uses, and supplies, it does not project demands or supplies. AWMP statute (10826(d)) states "Include an analysis, based on available information, of the effect of climate change on future water supplies." The Water Planning Projections are NID's most current effort to identify the effect of climate change on future water supplies.

The draft AWMP was available on the NID website March 3, 2021. The Public Hearing was held March 24, 2021, providing at least 20 days for review. The comment incorrectly states that public comment during the Public Hearing is not included in the record. The March 16, 20201 deadline was for written comments to be included in the Board Agenda packet, which must be produced one week prior to the Board meeting.

Comments by Syd Brown
NID Agricultural Water Management Plan
Public Draft March 3, 2021

Page 7:

- Table 2-2. The column labeled "Effect on the Water Supplier" indicates that with the addition of an average of 20 new agricultural customers/year that the "increased demand must be met with the District's supplies". This mandate seems overly harsh. There should be no mandatory delivery for new agricultural customers. The availability of "excess" source water should be the driving force, not new demand.
- Last paragraph: "The system is supplied by diverting NID's surface water rights"….The system is supplied by water, not water rights.

Page 8

- Table 2-3: French Reservoir Capacity is shown as 13,940 AF. The 2015 AWMP lists French Reservoir capacity as 13,840 AF (page2-2). All other capacities are shown to be exactly the same from 2015 to 2020. Please provide an explanation of the discrepancy.
- Table 2-4 lists the Water Conveyance and Delivery System components. The table differs significantly from the corresponding table in NID's 2015 AWMP (Table 2-5, page 2-5). Please explain the discrepancies. The 2015 version total is 499 miles; the 2020 version totals 484 miles; 15 miles less. Please explain the discrepancy.

Page 11

- Table 2-7. The precipitation totals are essential, and the most recent measurements are 2016. Since 2017 was a record-breaking year, it should be included in the calculations.

Page 15

- Table 2-11, last column is mis-labeled. The measurement levels should be listed as 78-95% confidence level, or accuracy (the inverse of what is shown).

Page 16

- Last paragraph, line 4: "analyse" should be <u>analyze</u>

Page 17

- 1. Dry Year Projection …"at least 70 percent of normal precipitation". Need to define "normal precipitation". This is critical, since the total precipitation varies so widely. What "normal" is used in this context? Mean? Median? Mode?

Page 25

- 2.3.6 Compliance and Enforcement second paragraph, line 2 "commiserate" should be "<u>commensurate</u>"

Page 26

- 2.3.8 Monitoring, Reporting, and Refinement paragraph 1, line 2 "commiserate" should be "<u>commensurate</u>"

Page 28

- **3.1** Agricultural Water Use paragraph 2 "The District is not aware of any growers that may use private groundwater wells in addition to District-supplied water." This is difficult to believe. While that District may not monitor or capture this information, it seems that there may even be present and past board members (and many others) who may supplement their NID purchases with private wells.

Page 29

Table 3-2 Agricultural Crop Data for 2016-2020. The lion's share of purchased water is for irrigated pasture (19,727 acres out of a total of 32,323 total irrigated acres). It would be useful to display water use per crop, since the Water Code Section 10802 states: "The Legislature finds and declares that all of the following are the policies of the state:…(b) The efficient use of agricultural water supplies shall be an important criterion in public decisions with regard to water." Without data about quantities of water applied to irrigated pastures, and about commercial status of said irrigated pastures, it is impossible to determine whether the water is being put to efficient and beneficial use.

Page 30

- 3.2 second line: Spenceville, not Spencerville

Page 31

- The calculated golf course use equates to over 7' of water applied to every acre (986 acres, 6,120 AF). This number seems excessive.

Page 33

- Of note: The highest and lowest runoff years are only two years apart (2015 and 2017)!
- Second to last line: "focus on managing ~~for~~ water budgets as well~~s~~ as…"

Page 42

- Paragraph 4: +/-25% is a HUGE variation, yielding very shaky results
- 5.2.1 Crop Consumptive Use, second to last line: +/-25% is a HUGE variation, yielding very shaky results.

Page 44

- 5.3, paragraph 2, line 4: The following list**s** efforts…. (add "s" to list)

Page 47

- Table 6-1: Inconsistency with the column headed 2070 DEW. The table note shows **DEM** as Drier, extreme warming scenario. Should the note be **DEW**? If DEW is the correct heading, then the table of acronyms should be corrected, as well (page iii).

Page 49

- Recycled Water Use, line 3: "A total of 7,551 of water supply was conserved…" the number lacks units. Acre Feet?

NID Response to:

Syd Brown

Page 7

Table 2-2 (DWR Worksheet 3) presents NID's identification of future service area changes that could impact existing operations. NID currently provides service to all within the service area, providing connection fees and other costs. Comment presents an opinion on future NID service policy that is different than current policy.

"diverting water per…" added.

Page 8

Recent surveying was completed that resulted in a calculated capacity of 13,940 AF.

NID continually updates its GIS information. Overtime, infrastructure is re-categorized and/or updated as changes are made. The 2020 summary does not include private canals.

Page 11

A table listing annual precipitation has been added.

Page 15

Table headings are from previous DWR-provided tables. Heading has been changed to "Estimated Level of Accuracy, %". NID will use the DWR-provided tables for the submission to DWR.

Page 16

Editing correction made.

Page 17

The WSCP is defined by the updated UWMP statutes in the Water Code. The annual assessment procedures provide NID flexibility to adjust its determination of potential supply availability to address the specific conditions for each respective year. Assessment steps expanded to state 60 percent or precipitation at Bowman Lake Reporting Station.

Page 25

Editing correction made.

Page 26

Editing correction made.

Page 28

The sentence refers to the fact that the District does not have or maintain any records of groundwater use that could be used for data reporting. Sentence is deleted.

Page 29

2020 water orders are added to Table 3-2. The customer survey values, including actual crop types and acreage, are not verified by NID. The reader is cautioned that water orders cannot be used to calculate crop duty factor as they do not represent each individual user's irrigation patterns, strategies, or actual application.

Page 30
Editing correction made.

Page 31
Values reported according to NID data and reflect water ordered, not applied.

Page 33
"... to a water budget limit.." added.

Page 42
AWMP Section 5.3 recommends enhancing the data collected and accuracy for future water management efforts.

Page 44
Editing correction made.

Page 47
Editing correction made.

Page 49
Editing correction made.

FOOTHILLS WATER NETWORK

March 16, 2021

Greg Jones, Interim General Manager
Chris Bierwagen, Division II, President, Board of Directors
Ricki Heck, Division I, Board Member
Karen Hull, Division III, Board Member
Laura L. Peters, Division IV, Board Member
Richard Johansen, Division V, Board Member

Nevada Irrigation District
1036 West Main Street
Grass Valley, CA 95945

Re: Re-submittal of the Network's Comments on NID Water Planning Projections and Comments on the Agricultural Water Management Plan

Dear Directors Bierwagen, Heck, Hull, Johansen and Peters,

The Foothills Water Network (the Network) is a coalition of non-governmental organizations concerned with watershed management issues in the American, Bear, and Yuba River watersheds. The Network thanks Nevada Irrigation District (NID or the District) for holding two public meetings to allow the public additional time to understand the draft Agricultural Water Management Plan (AWMP).

Unfortunately, the Network was disappointed that NID did not release the draft Plan earlier for public review and chose to cancel the two public meetings on March 3 and 4, 2021 and instead hold a NID Board Workshop on March 10, 2021 during the regularly scheduled Board Meeting. The short comment deadline and sudden change in meeting frequency and time does not give the public adequate opportunity to comment or review the merits of the Plan before the Board is required to adopt the Plan. Additionally, NID did not contact the Network as requested in comments submitted in October 2020. Both the Network and the public need an explanation as to how much the October Water Planning Projections are included in the AWMP. Until NID provides such information, the Network re-submits the enclosed comments provided on NID's Water Planning Projections. Also attached are the Network's comments on NID's 2020 Update of the Agricultural Water Management Plan (AWMP).

The Network looks forward to engaging with NID in response to these comments and reviewing the draft Agricultural Water Management Plan with the intent to continue informing NID's future water planning efforts.

Respectfully submitted,

Foothills Water Network

_____

Traci Sheehan Van Thull
Coordinator, Foothills Water Network
PO Box 573
Coloma, CA 95613
traci@foothillswaternetwork.org

cc: Chris Shutes, California Sportfishing Protection Alliance
Ashley Overhouse, Policy Manager, South Yuba River Citizens League

Enclosures: The Network's Comments on NID's draft Agricultural Water Management Plan
The Network's Comments on NID's Water Planning Projections

FOOTHILLS WATER NETWORK

March 16, 2021

Greg Jones, Interim General Manager
Chris Bierwagen, Division II, President, Board of Directors
Ricki Heck, Division I, Board Member
Karen Hull, Division III, Board Member
Laura L. Peters, Division IV, Board Member
Richard Johansen, Division V, Board Member

Nevada Irrigation District
1036 West Main Street
Grass Valley, CA 95945

Re: Comments on the 2020 Update of the Agricultural Water Management Plan

Dear Directors Bierwagen, Heck, Hull, Johansen and Peters,

The Foothills Water Network (the Network) is a coalition of non-governmental organizations concerned with watershed management issues in the American, Bear, and Yuba River watersheds. The Network thanks Nevada Irrigation District (NID or the District) for holding two public meetings to allow the public additional time to understand the draft Agricultural Water Management Plan (Draft AWMP).

Below are the Network's comments on the NID's 2020 Update of the Agricultural Water Management Plan.

I. Introduction.

The AWMP is an important planning tool to help NID improve efficiencies and provide information and a record to the public on the District's stewardship of precious water resources in the Yuba and Bear River watersheds. Additionally, the AWMP and Urban Water Management Plan will inform the update to the Raw Water Master Plan, also known as "The Plan for Water", later this year. These Plans will guide NID in determining if our community needs additional water storage. Therefore, it is essential these Plans include thorough and accurate data and modeling so that the community can understand our present and future water needs.

Overall, the Network is still concerned about recent data and modeling in NID's Water Planning Projections because they were incomplete and seemed to inflate demand. It is still unclear to what extent the Water Planning Projections informed the Draft AWMP. Therefore, the Network's comments are organized in two parts: first, overarching comments about the Plan

itself, and second, a list of missing items from the Plan. The Network has also re-submitted its comments on the Water Planning Projections; see attached enclosure.

II. Nevada Irrigation District's water deliveries, rainfall, and climate change modeling.

NID should be commended on the consistent delivery of agricultural water each year. The average for 2016-2020 was 109,126 acre-ft (AF) (Draft AWMP, 2021; Table 3-1), with a standard deviation (SD) of only 1,065 AF, and thus a very low coefficient of variation (100*(SD/Average)) of 1.0. Each year's water deliveries were remarkably similar, indicating that NID's water provision was dependable regardless of precipitation. In fact, the average water deliveries in 2011-2014, a period of severe drought, were very similar as well, with an average of 110,857 AF, with a SD of 2,021 acre-ft, and a coefficient of variation of 2.0 (AWMP, 2015; Table 3-1, Page 3-2).

If the AWMP had a table with the total precipitation of each water year during the 2016-2020 period, then the variation between years would be clear. The only weather data currently shown are long-term average precipitation for four locations (Table 2-7). The effective precipitation, which is defined as the estimate of the amount of precipitation consumed by the crop (Draft AWMP, 2021; Page 41), suggests high variation in annual precipitation among the 2016-2020 water years (Table 5-1). Yet there was no apparent shortage of water for delivery, even between years that differed by more than 2 times in effective precipitation.

It is important to note that NID does not report actual water *deliveries*. The agricultural water deliveries in the AWMP report are the contracted amounts of water sold to customers. If NID's water was in short supply in drought years, then contracts would have been made for lower delivery of water. As the Draft AWMP shows, this reduction did not occur. It is interesting that water deliveries did not increase in the 2012-2015 drought period, suggesting that customers' needs were satisfied with the same amount of water that is delivered in wet years. This implies that water conservation may be a way to reduce overall water demand.

For the water shortage stages that require actions to reduce demand, the defined thresholds are based on the available water in storage facilities (Draft AWMP, 2021; Pages 19-24). The Draft AWMP does not mention any such water shortage incidents that may have occurred during the 2016-2020 period. Since none are currently described in the Draft AWMP, a logical conclusion is that even minor water shortages were avoided during this period.

Given the apparently robust water availability at present, a fundamental question arises regarding the climate change analysis that suggests major water shortages in the future. With five years of drought, NID's climate modelling shows that the watershed would become significantly impacted, "with runoff reducing up to 75 percent in the early drought period, and 50 percent in later drought period" (Draft AWMP, 2021; Table 6-2, Page 47). This is a much greater impact than actually occurred during the severe drought in 2011-2014 (AWMP, 2015), as discussed above. The methods for these projections are not described, nor are the assumptions of the modeling. **The Network recommends that NID add a table with the dates of the water years used in these projections, along with the total precipitation of each of these water years.**

Without this information, the reader is forced to conclude that the analysis itself is not presented appropriately or that there is a reason to cover up the methods and assumptions.

Additionally, the Network has the following questions about the Draft AWMP:

1. Why is there such a huge discrepancy between historical average annual runoff of 232,600 AF reported on page 33 of the Draft AWMP, and average annual runoff of 383,500 AF reported on page 68, Table 6-2, of the Draft AWMP, on the climate modeling?

   Text excerpt from page 33: "Over the last 30 years runoff has fluctuated from less than 80,500 AF in a dry year (2015) to over 541,100 AF in wet years (2017). Average runoff from the Upper Division watershed, including the watershed area feeding Scotts Flat Reservoir, is approximately *232,600 AFY*. Due to provisions in the PG&E Coordinated Operations Agreement, hydrologic variability, and the fact that the District is not the senior water right holder, the historical runoff data evaluated to estimate the District's average runoff supply does not include supplies from the Bear River and the South Yuba River" (emphasis added).
2. If the 383,500 AF average annual runoff is based on more sub-basins (68) than have been usually included in average runoff (59), which sub-basins are included in the 383,500 AF calculations, and which are included in the 232,600 AF calculations? Additionally, how many years, and which years, are included in those averages?
3. Alternatively, is the 383,500 AF average annual runoff average of modeled years for a period of time around 2070? If so, is it for 68 sub-basins or for 59 sub-basins?
4. Has NID conducted a literature review of the climate change in the Sierra Nevada, or on groundwater recharge potential in the Bear River Watershed, such as from current United States Geological Survey (USGS) reports? Is there any evidence for a lack of potential percolation geologically in this part of the watershed? Overall, the Draft AWMP lacks literature review, which is stipulated as one of the methods used for estimating water budgets in the California Department of Water Resources' (DWR) "*Handbook for Water Budget Development: With and Without Models*."[1]

III. List of missing information in the draft Agricultural Water Management Plan.

The list below identifies missing information and problematic statements in the Draft AWMP document, such as omissions related to the definition of terms, assumptions of models, and sources of information. While this is a partial list, it still highlights many important items that are missing. This list also demonstrates how difficult it is to understand the premise of calculations and modeling for water budgets, water use efficiency, and projections of future drought due to climate change.

This list is organized in page order for ease of reading and comprehension.

Page 10 of the Report

- The Draft AWMP does not provide information on the precipitation of each water year in the AWMP (2016-2020) on this page or anywhere else in the report. It is impossible to

[1] Draft Handbook available online here: https://water.ca.gov/-/media/DWR-Website/Web-Pages/Programs/Groundwater-Management/Data-and-Tools/Files/Water-Budget-Handbook.pdf

evaluate the water status of each year, and then compare it with annual agricultural water deliveries (as is shown in Table 3-1), without knowing the annual precipitation of each water year.

- Annual precipitation is a fundamental component of the water budgeting process in DWR's *Handbook for Water Budget Development*. The Network requests NID add a table with precipitation in each water year for the same locations as shown in Table 2-7.

Page 16 of the Report

- Section 2.3.1 on "Vulnerability to Drought" and 2.3.1 on "Resiliency Planning" consist of a few short paragraphs and bullets that do not give any specifics or any actual planning approaches. These are stated to be forthcoming in a future 'Plan for Water.'

Page 18 of the Report

- In Section 2.3.4 "Water Stages and Responses", no mention is made of any incidents when the water shortage thresholds were exceeded during the 5-year period of this AWMP, or any other period. The Network requests that NID clarify whether such incidents ever occurred and where they occurred.
- The Draft AWMP includes a new drought contingency plan that is being put into operation. It would be helpful to show this new set of water shortage thresholds along with the past drought criteria to be able to compare the frequency of water shortages through time.

Page 28 of the Report

- The Network requests NID emphasize that agricultural water deliveries are based on agricultural *sales*, and actual use is not measured in any way other than at the head of a canal and the setting of flow at the farm gate. The assumption is that all purchased water is applied water. In Section 3.1 on "Agricultural Water Use", several paragraphs are dedicated to the justification for not taking proactive steps to accurately assess the actual water used. Thus, calculations of water use efficiency and water budgets are of questionable value.

Page 32 of the Report

- In Section 3.6 on "Water Loss", NID assumes that 15% of the applied water is lost in the canal system. No justification for this loss factor is given, nor is a reference provided to explain why this factor is used.

Page 33 of the Report

- Water runoff is presented inconsistently in the document, with different values used in different sections. No explanation is given for the way the different values are calculated or modeled, or why the values differ across the AWMP document.
    - As an example, this statement is made on page 33: "Over the last 30 years runoff has fluctuated from less than 80,500 AF in a dry year (2015) to over 541,100 AF in wet years (2017). Average runoff from the Upper Division watershed, including the watershed area feeding Scotts Flat Reservoir, is approximately

232,600 AFY." Yet in Table 6-2 on Page 48, average annual runoff is given as **383,500 AFY**.

No information is given to explain the discrepancy in these values, nor is there an explanation for the sources of the data such as relevant sub-basins, which years, or how modeling was conducted.

Pages 34-35 of the Report

- The Draft AWMP does not provide any explanation or context for Table 4-1 on surface water supplies. It would be very useful to know how the carryover storage in the 2016-2020 period compares with other periods, especially the 2011-2015 period of severe drought. Also, how does water runoff during this 5-year period compare to average runoff historically?
- Moreover, no methodologies are mentioned for the calculation of variables shown in Table 4-1. DWR's *Handbook for Water Budget Development* describes several options for approaches, and it would be useful to know which ones were used. This would help to know the pitfalls or benefits involved.

Page 41 of the Report

- The description of the "Water Budget" in Section 5 of the Draft AWMP is severely deficient, because it mainly explains why it is impossible to deal with most of the components of a water budget. Additionally, no literature is cited on the water systems in the region. For example, no updated USGS reports on hydrology and groundwater are cited. Nor are reports from other water agencies in the area mentioned.

Page 42 of the Report

- Crop Consumptive Use (CCU) is very important for understanding crop water demand and water use efficiency, and yet the details of these calculations are missing. Is the CCU only calculated for the agricultural crops in Table 3-2? Or does it also include wetlands and other natural or managed ecosystems, which are prevalent in the NID Service Area?
- Apparently, for CCU, there were many assumptions that were not mentioned in this document. How were the crop coefficients determined for different crops and locations? Were the Browns Valley and Auburn California Irrigation Management Information System (CIMIS) stations used for crop coefficients? How were the crop coefficients determined for different crops and locations? Why is the estimated accuracy of the data +/- 25%?

Page 44 of the Report

- In Table 5-2, no explanation of the data on quantification of surface outflows is given in the text. Is the evapotranspiration considered to be a high proportion of agricultural water deliveries, or does it suggest that substantial water can be conserved? See comment on Table 5-3 (page 45) below.

Page 45 of the Report

- NID's water management objectives consist of a few short generic topics, with no prioritization and no explanation for specific improvements. Each topic consists of only

two or three lines of text. Instead of directly addressing the possibilities, NID claims that these issues will be developed in the future "Plan for Water." The Network recommends NID clarify that "The Plan for Water" is also the update process to the Raw Water Master Plan.

- In Table 5-3 on pages 45-46, NID considers that 83% of the water deliveries is beneficially used to support agricultural crops. Again, no explanation is given for this high-water use efficiency, as was discussed above.

Page 47 of the Report

- The single paragraph on climate change is inadequate to explain the methods and assumptions of the modeling done last year in a report entitled "*Hydrologic Analysis Technical Memorandum – Final Report*" (HDR, 2020). It is beyond the scope of this bulleted list to point out the many missing elements of the approach, assumptions, and interpretations. Please see the Network's comments on the Water Planning Projections for more detail.
- To depend on such a cursory description of the climate change approach is very difficult for stakeholders, who would benefit from understanding the modeling process.
- A literature review should be included to describe the results of the many studies on how climate change will affect the Sierra Nevada under different climate scenarios. Scientists from the University of California Los Angeles, University of California Merced, the USGS and other organizations have been actively researching this topic, and California's Fourth Climate Assessment provides an integrated analysis of this research as well.[2]
- For Table 6-1, again an explanation of the modeling approach is necessary. For how the runoff in 2070 will compare with average annual historical runoff, a key number is missing; there is no mention of the actual value for average annual historical runoff, or how it was determined. In comment 6, it has already been stated that there are different values for annual runoff within the document. What is the basis of the value used here?
- The Network recommends striking the sentence, "[r]esults indicate the watershed is significantly impacted in this drought condition, with runoff reducing up to 75 percent in the early drought period, and 50 percent in later drought period." Alternatively, provide a detailed explanation of the modeling approach and assumptions, along with how average runoff is calculated.

Page 48 of the Report

- The Network is particularly concerned with Table 6-2. There are serious omissions of information and a lack of explanation of assumptions on the projected watershed runoff during historical five-year drought. There is no mention of how average runoff was calculated, which years were used in the modeling, or the annual precipitation in these water years.
- Overall, the Network believes it is unacceptable to imply that severe drought is probable based on this cursory table and poorly described modeling exercise.

[2] California's Fourth Climate Change Assessment (2018); Climate Science Special Report: Fourth National Climate Assessment (NCA4), Volume I (2017). Available online: https://www.climateassessment.ca.gov/regions/

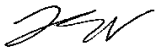
- No description of the geology is given for different parts of the District. The Draft AWMP states, "[a] prolonged drought, or increased winter runoff could reduce the amount of water that percolates into the rock fractures, reducing the amount of fractured rock groundwater." It also should be stated that other areas with alluvial sediments may increase in groundwater storage given higher runoff and less snowpack.
- Overall, groundwater is left out of most of the document or inconsistently referenced. Additional background information on hydrology, geology, and soils should be provided in the final AWMP, if these types of statements are to be included.

IV. Conclusion.

The Network looks forward to engaging with NID in response to these comments and reviewing the draft Agricultural Water Management Plan with the intent to continue informing NID's future water planning efforts.

Respectfully submitted,

Foothills Water Network



_____

Traci Sheehan Van Thull
Coordinator, Foothills Water Network
PO Box 573
Coloma, CA 95613
traci@foothillswaternetwork.org

FOOTHILLS WATER NETWORK

October 19, 2020

Greg Jones, Interim General Manager
Ricki Heck, Division I, President, Board of Directors
Chris Bierwagen, Division II, Board Member
Dr. Scott Miller, MD, Division III, Board Member
Laura L. Peters, Division IV, Board Member
Nick Wilcox, Division V, Board Member

Nevada Irrigation District
1036 West Main Street
Grass Valley, CA 95945

Submitted via e-mail: info@nidwater.com

Re: Water Planning Projection Documents

Dear Mr. Jones, President Heck, and Board Members,

The Foothills Water Network (the Network) is a coalition of non-governmental organizations[1] concerned with watershed management issues in the American, Bear, and Yuba River watersheds. The Network has been anticipating the release of the updated Nevada Irrigation District (NID) Hydrology and Hydraulics modeling or Water Planning Projections documents for many years and appreciates that NID has made them publicly available for review. These are important components for accurately updating NID's Agricultural Water Management Plan (AWMP) and Urban Water Management Plan (UWMP), both due in 2021[2] and for developing an important new requirement, a water budget. The Raw Water Master Plan (RWMP), also known as the Plan for Water, will ultimately need to reconcile the various plan perspectives and conclusions.

The Network thanks the NID Board for convening a webinar on September 24, 2020, which afforded an opportunity for HDR consultants to better explain the models and assumptions used to Network members and other stakeholders ("September 24 webinar"). After further

[1] Foothills Water Network, American Rivers, American Whitewater, California Outdoors, California Sportfishing Protection Alliance, Friends of the River, Gold Country Fly Fishers, Northern California Council of Fly Fishers International (formerly Northern California Council Federation of Fly Fishers), Sierra Club, South Yuba River Citizens League, and Trout Unlimited.
[2] *See* California Water Code, §§10610-10656, §10608 and new AWMP content requirements of AB 1668 (Friedman, Statute of 2018).

review of the Water Planning Projections documents and Appendices, and in consideration of the technical clarifications provided by HDR staff during the webinar, the Network presents the following comments and recommendations.

I. Overarching Comments

In April 2018, NID hit the pause button on efforts to develop its proposed Centennial Dam project and undertook an update of its Raw Water Master Plan (RWMP).[3] As the Network understood it, the underlying rationale for this was to evaluate the District's long-term water supply and needs before potentially embarking on an expensive and controversial new reservoir.

The Water Planning Projections documents and underlying technical work make some important strides in the evaluation of the District's long-term water supply and needs.

The update in the *Hydrologic Analysis Technical Memorandum (TM)* and supporting documents, whose purpose is to re-evaluate future hydrology in light of various climate change scenarios, generally makes sense and seems well supported. The decision to evaluate several scenarios makes sense, as does the decision to use the runoff projections from the median climate change scenario for most of the analysis.[4] The Network appreciates the even-handedness of using the median climate change scenario when performing analysis in other documents.

HDR's update to the ResSim operations model that NID and Pacific Gas & Electric Company (PG&E) developed in the Federal Energy Regulatory Commission (FERC) relicensing for NID's Yuba-Bear Hydroelectric Project[5] also makes sense. The update adds the Deer Creek system of NID's operation and the lower section of NID's Bear River system to complete the model of NID's water supply operations. These added portions of the model were not included in detail in relicensing. The new ResSim model will be a tool that adds technical precision and competence to multiple future evaluations by NID and stakeholders.

On the downside, NID reports the output from the new ResSim model only in the extremes: a very high-level summary in the *Water Supply Analysis Technical Memorandum (TM)* and extensive DSS-Vue files for actual model run output. More analytical tables, similar in scale to Appendix C for the *Hydrologic Analysis TM*, would be appropriate. The Network discusses this in greater detail below.

---

[3] The Foothills Water Network (FWN) is a broad coalition of more than a dozen local, state and national conservation groups that has challenged the proposed Centennial Dam since 2014. FWN is leading the formal regulatory process, commenting on what NID should study in its environmental review. FWN also filed a protest of the water rights application as did more than a dozen other organizations including the California Department of Fish and Wildlife (CDFW), U.S. Bureau of Reclamation, and South Sutter Water District.

[4] *Hydrologic Analysis Technical Memorandum (TM)*, p. 14. While the overall *TM* is generally supported, the Network would appreciate additional clarification as to why HDR only used the Cisco Grove gage at 5,000 ft elevation rather than incorporating readings from other gages at higher elevations, such as Jackson Meadows.

[5] The Federal Energy Regulatory Commission (FERC) hydroelectric relicensing process for NID's Yuba-Bear Hydroelectric Project No. 2266 ("relicensing") with all related federal, state and nongovernmental organizations is still ongoing as of October 19, 2020.

The new demand projections that NID has developed, as described in the *Water Demand Projection Model Update*, are less satisfactory. The Network considers this the heart of the planning exercise. Unfortunately, the "objective" stated at the top of page 8, "consistency with previous water planning assumptions, but incorporating new regulations and climate change impacts," does not appear to reflect a major change in the methodology of how the demand projection model translates land use projections into demand projections. In other words, the results in the *Water Demand Projection Model Update* do not actually produce an "update" for planning purposes. For example, if NID assumes a one percent per year increase in demand over the next fifty years, then NID is likely to need more water. This is a predictable outcome of the "previous water planning assumptions" that did not require a new water planning effort to determine. Alas, this is not an accurate assumption that can be utilized for planning purposes.

The *Water Supply Analysis TM* relies heavily on two tables: Table 2-1 and Table 3-1.

Water Supply Analysis TM Table 2-1 is confusing because it is presented in the context of carryover storage. This overlooks the fact that some of the instream flow requirements, particularly in December-June of wetter water years, will be met by water that is, or will be, runoff in rivers and streams. This is generally spill that could not be captured by NID anyway. The parties in relicensing, including NID,[6] that designed the new flow requirements accounted for this spill water, recognizing that higher flow requirements during periods of high runoff change the *timing* of spill but not the overall *quantity* of spill. In sum, Table 2-1 suggests that the amounts of water listed all come out of NID's storage and are reflected as decreases in carryover storage on a one-to-one basis. This is not true.

This misconception is one that has arisen several times over the past year. For example, during Agenda Item 9 of the NID Board Meeting on January 22, 2020, NID staff made a presentation to the Board that suggested that the flow requirements of the new FERC license would cause NID's end-of-year storage in wet years to be much less than storage in drier years. Staff made the mistake of simply subtracting the number of acre-feet of required flow (the same amounts shown in *Water Supply Analysis TM* Table 2-1) from end-of-year-storage.[7] However, again, the water needed to meet the instream flow requirements, particularly in Wet years, does not come exclusively from storage. Instream flows come in substantial part from spill or from water that NID chooses to release from storage for power generation knowing that it will fill its reservoirs later in the year. For further discussion and clarification, please see the comments of the California Department of Fish and Wildlife (CDFW) to NID's Water Planning Projections.

Water Supply Analysis TM Table 3-1 does not make best use of the tools that NID and HDR have developed. As clarified in the September 24 webinar, the data presented in Table 3-1 is not output from the ResSim model. Rather, the ResSim model was used only to calculate the starting carryover storage value for the year previous to the first year of the "projected 5-year

[6] NID negotiated in good faith for more than 10 years with State and Federal agencies, PG&E, neighboring water agencies, and the Network within the relicensing process for the Yuba-Bear Project to establish essential flows for all stakeholders, including NID customers and the environment. NID proposed the new flows in their Final License Application to FERC. Flows were negotiated and agreed to based on existing infrastructure.

[7] *See* https://nidwater.com/wp-content/uploads/2020/01/01222020_BOD_Item_9.pdf, slides 15 and 17.

drought water supply" that NID selected for analysis. As discussed during the webinar and below, the projected 5-year drought is problematic because it strings together the five worst water years in the period of record to analyze. But of perhaps even greater concern is that this does not allow use of the ResSim model. One of the consequences is that the calculated outcome appears to assume that all water for minimum instream flows comes out of storage.

Below, the Network discusses in greater detail our concerns with the *Water Demand Projection Model Update* and the *Water Supply Analysis TM* in particular. We also make recommendations to improve the analysis and its presentation in these documents and associated appendices.

II. Comments on the ResSim Model Runs Performed for the 2020 Water Planning Projections

In order to evaluate different elements of current and future water demand and supply, NID commissioned HDR to model several different scenarios with the revised ResSim operations model.

These simulations include:

1. Existing hydrology, existing flow requirements, existing NID demand.
2. Existing hydrology, Final Environmental Impact Statement (FEIS) projected future FERC flow requirements, existing NID demand.
3. Existing hydrology, FEIS projected future FERC flow requirements, projected 2060 NID demand.
4. Median climate change hydrology, FEIS projected future FERC flow requirements, projected 2060 NID demand.

Notably absent from these simulations is the following scenario:

5. Median climate change hydrology, FEIS projected future FERC flow requirements, *existing* NID demand.

This absent scenario is important because it would allow comparison of the relative impact on NID water supply operations of the new FERC flow requirements and projected demand increases under climate change hydrology. In an Opinion Editorial piece published September 13, 2020, NID Director Wilcox stated: "The largest single impact on carryover storage is, in fact, environmental flows and not increased consumption."[8] Existing modeling shows that this is clearly not the case under historical hydrology, and on its face we believe it is incorrect under climate change hydrology. However, without a model run that allows direct comparison of different demand requirements and the new FERC requirements under climate change hydrology, **there is no way to support this contention under future hydrology.**

[8] Nick Wilcox, *Our Community's Water Future*, Yubanet September 13, 2020. Available at: https://yubanet.com/regional/op-ed-nick-wilcox-our-communitys-water-future/.

The Network also notes that the California Department of Fish and Wildlife (CDFW) and South Yuba River Citizens League (SYRCL) Watershed Science staff reached different values for average carryover storage under each of the modeled scenarios than did HDR.[9] HDR and NID should endeavor to reconcile these discrepancies.

Requests and Recommendations:

1. The Network requests that NID commission HDR to run an additional model scenario (median climate change hydrology, FEIS projected future FERC flow requirements, *existing* NID demand) and provide the output in DSS-Vue format to allow direct comparison with the other scenarios.
2. The Network recommends presentation of additional tables and figures in an appendix to the *Water Supply Analysis TM* showing model inputs and output, in order to increase transparency and reduce the need to rely on a few aggregated summary numbers. The Network would be pleased to discuss specific data that would be particularly useful to include. In addition, the Network includes specific recommendations below regarding the presentation of additional data.
3. The Network recommends that HDR create a subset of data output for all modeled runs in DSS-Vue format and make these data available to stakeholders. The Network recommends discussions with CDFW and Network representatives to focus on the most useful output. Something on the order of 100 lines of output per run should help make the output more accessible to knowledgeable users.
4. The Network requests that NID schedule a webinar or phone call(s) with CDFW and the Network to talk through discrepancies in existing data output.

III. Comments on the *Water Demand Projection Model Update* and Recommendations

As discussed above, the *Water Demand Projection Model Update* does not take a fresh look at the calculation of increases in water supply for various projected changes in land use. The *Water Demand Projection Model Update* continues to extrapolate demand from "future, gross land area receiving water."[10]

It is unclear why NID assumes that there will be increases in gross land area receiving water. The *Water Demand Projection Model Update* describes projected changes in population in Placer and Nevada counties, but does not connect these changes with prospective increases in acreage receiving water. Indeed, the projection for Nevada County is for a decrease in population (Figure 3-3). For Placer County, Figure 3-3 shows an overall projected increase in population, but does not differentiate how much of this projected increase will occur in NID's service area. There is little persuasive evidence that these changes will contribute to an increase in NID's raw water demand. As pointed out during the September 24 webinar, the model predicts a 44% raw water demand increase in the Deer Creek System (Nevada County) by 2060

[9] *See* comments of CDFW.
[10] *Water Demand Projection Model Update*, p. 7.

and a 36% raw water increase in the Bear River System (largely in Placer County).[11] In aggregate, these projections are excessively high and not justified.

Projecting future raw water demand by examining incremental changes in land use has an inherent propensity for error because small degrees of overestimation compounded over forty years creates an overall large error. A reasonable way to ground-truth such seemingly inflated, acre-by-acre calculations is to review actual historical demand performance over extended periods of time. Several participants in the September 24 webinar raised this issue. HDR staff were reluctant to include recent demand trends in their analysis, however, observing that there had been both very wet years and drought years in the recent past. However, this may, in fact, be NID's 'new normal'.

The Network recommends NID include a longer dataset for its raw water demand in a revised memorandum, at least as long as the 2006-2017 time period that the *Water Demand Projection Model Update* provides for urban use.

Another way to produce more accurate water demand projections is to look at similar counties to observe their patterns of growth over the past two decades. El Dorado County, for example, passed an update to its General Plan in the early 2000's that anticipated substantial growth in both urban and raw water demand.[12] However, the recession of 2008 left El Dorado Irrigation District (EID) significantly overextended in its infrastructure construction program and associated financing, forcing large cutbacks in EID staff.[13] EID has subsequently restored equilibrium and revised its projected demand figures. In 2001, EID secured water rights permit 21112 to serve anticipated growth in El Dorado County. However, EID has not used almost any of the water available under this permit, and earlier in 2020 issued a Notice of Preparation for a petition to the State Water Resources Control Board to extend the time to put this permitted water to use.[14] NID can take a valuable lesson from the experience of El Dorado County and EID, which is similar in many ways to Nevada County.

During the September 24 webinar, HDR staff suggested unpredictable events are generally short-term. While this may have largely been true in the past, the era of climate change appears to be making it less true.[15] Large floods from atmospheric rivers (AR) and fires, for example, may affect the durability or productivity of acreage under cultivation for years after

[11] *Id.*, Tables 6-1 and 6-2.
[12] County of El Dorado Adopted General Plan. 2004. Available at: https://www.edcgov.us/Government/planning/generalplan/Documents/2004%20General%20Plan%20Adopted%207-19-04%20(original).pdf.
[13] Lamb, Celia. "Irrigation District Lays off 31 people." Sacramento Business Journal. December 9, 2008. Available at: https://www.bizjournals.com/sacramento/stories/2008/12/08/daily33.html.
[14] EID, Notice of Preparation of an Environmental Impact Report and Notice of Scoping Meeting for the Permit 21112 Project. Available at: https://www.eid.org/home/showdocument?id=13432. *See esp.* p. 7: "The District has been mindful of its ratepayers by making efficient use of its existing supplies to meet current demands. This responsible use of existing supplies has allowed EID to avoid premature investments in costly infrastructure that are not yet needed to meet current demands."
[15] Dhakal, N., S. Jain, A. Gray, M. Dandy, and E. Stancioff (2015), Nonstationarity in seasonality of extreme precipitation: A nonparametric circular statistical approach and its application, Water Resour. Res., 51, doi:10.1002/2014WR016399.

the actual event. Increases in ambient temperature may change the viability of various crops, including wine grapes. All of these factors are likely to change levels of risk for both urban and agricultural development in the NID service area. Among many other factors, increases in insurance premiums of all types will accompany increased risk, and insurance for some property may become unavailable. Whether those levels of risk will lead to decisions to reduce development is not known. However, it does call into question the apparent assumption that, since the last drought is behind us, the patterns of growth predicted in 2005 and 2011 remain reasonable predictions for the future.[16] The Network recommends that NID include in a revised memorandum discussion and evaluation of such potential landscape-level changes.

Additionally, the *Water Demand Projection Model Update* does not factor cost into predictions of future demand increases at all. It is extremely unlikely that NID will be able to continue to deliver raw water at the same relatively low cost as it has in the past. It is the Network's understanding that NID's financial reserves are low. Hydropower revenues are down.[17] Issuance of a new FERC license will increase NID's expenses substantially. HDR's predicted total cost for the license over fifty years is $212 million, with a single year cost of $22 million in the third year after license issuance.[18]

Nonetheless, the *Water Demand Projection Model Update* makes no evaluation of how changing costs for raw or treated water will influence future demand. The Network urges NID to revise the memorandum to evaluate and discuss this factor. It is reasonable to assume that an increase in cost could result in less demand.

The *Water Demand Projection Model Update* states that, as part of its development, HDR and NID recalculated actual usage of water in NID's system and trued-up current estimates for the number of acre-feet various local crops use per acre. There is value in improving accuracy on these calculations. Unfortunately, this misses the overarching issue of continuing to apply the assumption from 2005 and 2011 that there will be perpetually increasing raw water demand based on some kind of projected, but unsubstantiated, expansion of population, or increased agriculture or landscaping, or both.

The *Water Demand Projection Model Update* treats "Environmental Water" as a demand similar to raw and treated water deliveries and lumps them together under the category "total system demands."[19] This shorthand is confusing, for reasons stated above and below in the context of supply. The confusion is reproduced in the document *How NID Uses Water Planning Projections*: "Up to nearly 60,000 acre-feet per year *of NID's water supply* must be dedicated to flow requirements to enhance riparian and aquatic habitat for fish and other species and cannot

[16] *Water Demand Projection Model Update*, Figure 5-1, p. 9. This Figure supports the Network's comments that the demand increases are based on the old methodology founded on land use and cropping patterns. It additionally raises the question of how NID selected among the baseline, low and high projections for scenario planning.
[17] *See* e.g, Kathan, Jesse. "Decline in hydropower hampered by drought will impact utility costs." Mercury News. August 9, 2020. Available at: https://www.mercurynews.com/2020/08/09/decline-in-hydropower-hampered-by-drought-will-impact-utility-costs/.
[18] NID Board of Directors meeting July 8, 2020, Agenda Item 4 "Update on New FERC license." Available at: https://nidwater.com/wp-content/uploads/2020/07/07082020_BOD_Item_4.pdf.
[19] *Water Demand Projection Model Update*, pp. 27-28.

be used by NID to meet customer demand (up from 5,000 acre-feet per year from the previous license)."[20]

Requests and Recommendations:

1. The Network strongly recommends removing the "Environmental Flows" section, including Table 5-6, from the *Water Demand Projection Model Update*. Minimum instream flows, unlike consumptive demand, are met, in part, by uncaptured water. Conflating minimum instream flows with consumptive demand is inherently confusing and misleading.
2. Similarly, the Network recommends removal of minimum instream flows from Table 6-3 ("Total System Projected Demands"), limiting the table to Annual Consumptive Demands (currently labeled "Annual System Demand").
3. Throughout the water planning effort, the Network recommends replacing the term "environmental flows" with the more neutral term "unrecoverable minimum instream flows."
4. In order to accurately account for the water supply effects of new minimum instream flows, the Network recommends the following approach: for each of the four existing model runs and the fifth model run recommended above, include a table in an appendix that shows the year-by-year quantity of water in acre-feet that minimum instream flow requirements are actually delivered from storage. This table can also be used to complete the replacement for Table 3-1 in the *Water Supply Analysis TM*, as described below.
5. The Network requests that the *Water Demand Projection Model Update* add analysis of the effects of raw water pricing on raw water demand. If available, NID could start such analysis with the demand response to the largest recent raw water price increase within the District. Additional analysis could come from case studies, preferably from foothill counties in California.
6. The Network recommends addition of an appendix to the *Water Demand Projection Model Update* that analyzes projected and actual water demand in El Dorado County, as discussed above.
7. The Network recommends NID add a section or an appendix to the *Water Demand Projection Model Update* that analyzes the potential impacts of landscape-level changes that have a reasonable likelihood of affecting future water demand within the District. Broadly, these potential changes are likely to be related to climate change. They include, but are not limited to, floods, wildfire, and changes in crop suitability. The Network further recommends that this analysis include potential policy decisions that NID should consider in responding to the effects of such changes.
8. The Network recommends adding to the *Water Demand Projection Model Update* an analysis that accounts for the uncertainty of water demand increases within the District's service area in the next 40 years. This analysis should focus on comparison of two model runs, identified above as Run 4 (median climate change hydrology, FEIS projected future FERC flow requirements, projected 2060 NID demand) and

[20] *How NID Uses Water Planning Projections*, August 26, 2020. Available at: https://nidwater.com/2020/08/how-nid-uses-water-planning-projections/(emphasis added).

requested Run 5 (climate change hydrology, FEIS projected future FERC flow requirements, existing NID demand). This will bracket likely ranges of demand. It will also present the NID Board with the consequences of potential policy choices that encourage or discourage demand increases.

IV. Comments on the *Water Supply Analysis Technical Memorandum* and Recommendations

The *Water Supply Analysis TM* is built almost entirely around Table 3-1, titled "*Summary of 2070 5-Year Drought Water Supply*." This table is problematic in and of itself. It takes one hypothetical extreme drought as the only focus of analysis. As described above, it presents data that is calculated, not modeled.[21] It also does not provide a view of the overall effect over an extended period of the various elements it analyzes.

NID references the general guidance in California Executive Order B-37-16 (8) to justify the 5-Year Drought Planning analysis. To fulfill this requirement, NID evaluated the five driest years in the period of record and sequenced them in Table 3-1.[22] Neither the draft *Guidebook for 2020 Urban Water Management Plans*[23] nor the draft *2020 Agricultural Water Management Plan Guidebook*[24] require the methodology NID employed. On the contrary, California Water Code § 10612 requires that a drought plan be based on the "driest *five-year historic sequence* for the agency's water supply."[25] NID selected the individual five driest years (almost one from every decade) and calculated supply as if they were in sequence, rather than using a more realistic historic drought scenario for estimation.

The Network appreciates the recently published HDR memos showing alternative 5-year drought scenarios. However, the Network recommends that NID commission HDR to complete the model run described above (Median climate change hydrology, FEIS flow requirements, *existing* NID demand) and, together with the 4 runs HDR has already performed, present a series of tables built around the year-by-year output for the period of record. The tables should include the categories (outputs) shown in the existing Table 3-1. They should add a line that shows on an annual basis how much of the modeled required minimum instream flow comes from storage and how much comes from spill or discretionary power releases.

---

[21] NID used mass-balance calculations rather than a model such as Hec-ResSim. CDFW recommends NID use the Hec-ResSim model because "1) the tool has been vetted by many stakeholders, 2) the tool better accounts for natural system variability when assessing for drought impacts to water delivery potential, and 3) the tool allows for comparative analysis of relative impacts to reservoir carryover storage." *See* CDFW Comments.

[22] California Water Code § 10826.2, et sec.

[23] California Department of Water Resources. Urban Water Management Plan Guidebook 2020. Available at: https://water.ca.gov/Programs/Water-Use-And-Efficiency/Urban-Water-Use-Efficiency/Urban-WaterManagement-Plans.

[24] California Department of Water Resources. Agricultural Water Management Plan Guidebook 2020 (draft). Available at: https://water.ca.gov/News/Events/2020/Sept-20/Draft-2020-Agricultural-Water-Management-Plan-Guidebook-Virtual-Public-Meeting.

[25] California Water Code § 10612 (emphasis added).

The Network believes that modeled, rather than calculated, scenarios will provide a much more accurate view of the effects of each of the scenarios on NID's water supply operations. From each modeled scenario, the reader will be able to pick out the five-year sequence with the greatest shortages. Some technical discussion will be needed to decide how to incorporate NID's Drought Contingency Plan and any other water shortage policies into the ResSim model.[26]

Footnote 1 of Table 3-1 in the *Water Supply Analysis TM* refers to watershed runoff "per NID water rights." On clarification provided during the September 24 webinar, HDR staff explained that this meant that water available to PG&E was backed out of the calculation. This means that based on the calculations in the *Water Supply Analysis TM*, PG&E water for power generation would, in some cases, have priority over NID water supply. This particular prioritization does not make sense when considering regional water supply vulnerabilities to climate change.

A revised *Water Supply Analysis TM* should include analysis of the opportunity for NID to acquire the Lower Drum Hydroelectric Project and partially re-operate it to prioritize water supply over power generation. In addition, an update of the "red-blue" tool developed in relicensing that determines water available to PG&E (red) and to NID (blue) would enable a more granular analysis of how much water NID would have available for water supply in a modeled period of record. This would improve the transparency and accuracy of the calculated "watershed runoff" available to NID.

The Network thanks NID for attempting to diversify potential drought scenarios by releasing two additional technical memoranda from HDR on October 8, 2020. On brief review, the calculations in these memoranda seem to indicate that NID will generally have adequate water supply to meet water demands, even in a consecutive five-year drought. However, the new drought scenarios remain based on calculated outcomes, not the output of model runs. The Network's recommendations above regarding use of modeled data in preference to calculated data remain the same.

The Network recommends that NID develop additional analysis regarding climate change, wildfire and forest management. This would most likely fit best as an appendix to the *Hydrologic Analysis TM* and/or the *Water Supply Analysis TM*. Drought contingency is not the only new risk facing watersheds in the Sierra Nevada. NID's current collective water planning documents do not address uncertainties related to the potential damage to or failure of dams and conveyance infrastructure, the higher probability of atmospheric rivers (AR) and flooding, or the impacts of forest fires and forest management on watershed yield.

NID should consider the influence that reduced evapotranspiration from wildfire and forest management will have on runoff. Wildfire decreases tree density and evapotranspiration, while increasing soil moisture and runoff.[27] A study from the University of California Merced

[26] The two alternative drought scenario memorandums released by HDR during this comment period do not provide this technical discussion.

[27] Boisrame´, G., Thompson, S., Collins, B., & Stephens, S. (2017) Managed wildfire effects on forest resilience and water in the Sierra Nevada. *Ecosystems* (2017) 20: 717–732. DOI: 10.1007/s10021-016-0048-1.

(UC Merced) found that post-fire evapotranspiration decreased significantly for 5-20 years following wildfire in densely forested areas of the Yuba River and American River watersheds.[28] Forest management, already practiced to some degree by NID, decreases evapotranspiration in similar ways. UC Merced researchers estimate that improved forest management in large areas in the Yuba River and Bear River watersheds could increase runoff by 4 percent to 10 percent, depending on the extent and types of practices used.[29] The upper Yuba watershed has substantial storage of subsurface water that allows trees to tap into deep water during warm, dry periods in the summer[30] and facilitates recovery after wildfire. Continued forest management will reduce evapotranspiration and increase runoff.

NID should also consider the likelihood that mega-floods (like that of 1862) will become more frequent due to more atmospheric rivers (AR).[31] Runoff from these storm events could double, on average, in the latter half of this century.[32] Researchers from University of California Los Angeles (UCLA) warn: "…[H]ydroclimatic extremes may rise more rapidly than the gradual projected shift in regional mean precipitation."[33] And the "…increase in runoff during the most extreme AR events could present major flood control challenges for the region."[34] Analyzing and planning for these impacts is particularly important for NID's raw water customers and the agricultural sector in the Yuba and Bear River watersheds.

Requests and Recommendations

1. The Network recommends replacing the 5-year drought scenario that the *Water Supply Analysis TM* analyzes in Table 3-1 with the "five-consecutive driest years scenario" (Alternative 1) that NID developed in response to the September 24 webinar.[35] This will allow NID to use data derived from output from the HEC ResSim model, rather than calculated data, greatly increasing the accuracy, transparency, and utility of the memorandum.
2. The Network recommends that NID commission HDR to develop the data needed to re-create a table similar to Table 3-1 using data output from the model runs recommended above: Run 4 (median climate change hydrology, FEIS projected future FERC flow requirements, projected 2060 NID demand) and requested Run 5

[28] Roche, J.W., Ma, Q., Rungee, J., & Bales, R.C. (2020). Evapotranspiration mapping for forest management in California's Sierra Nevada. *Frontiers in Forests and Global Change*. Vol. 3. Available at: https://www.frontiersin.org/article/10.3389/ffgc.2020.00069, DOI=10.3389/ffgc.2020.00069
[29] *Id.*
[30] *Id.*
[31] Swain, D.L., Langenbrunner, B., Neelin, J.D., & Hall, A. D. (2018). Increasing precipitation volatility in twenty-first century California. *Nature Climate Change* VOL 8 | MAY 2018 | 427–433, https://doi.org/10.1038/s41558-018-0140-y
[32] Huang, X., Stevenson, S., & Hall, A. D. (2020). Future warming and intensification of precipitation extremes: A "double whammy" leading to increasing flood risk in California. *Geophysical Research Letters*, 47, e2020GL088679. https://doi.org/ 10.1029/2020GL088679.
[33] Swain et al., *op. cit.*
[34] Huang et al., *op. cit.*
[35] HDR, "Alternative 5-year drought based on the five-consecutive driest years in the 1976-2011 period of record," October 6, 2020 ("five-consecutive driest years scenario"). Available at: https://nidwater.com/wp-content/uploads/2020/10/Consecutive-5-year-drought-Memo_Alt1.pdf

(climate change hydrology, FEIS projected future FERC flow requirements, existing NID demand).

3. The Network further recommends that HDR create 2 tables or sets of tables to replace Table 3-1 of the *Water Supply Analysis TM*. HDR should base one table or set of tables on Run 4 and another on Run 5. Rather than limiting the tables to the 5-year drought sequence alone, the Network recommends showing the output for each year in the period of record, with the data for 5-year drought sequence highlighted.
4. The Network recommends that new tables replace the line for "environmental flow requirement" with data that shows the actual amount of water required from storage in each year to meet unrecoverable minimum instream flows. (*See* parallel recommendation #4 for the *Water Demand Projection Model Update*, above).
5. The Network recommends that, in addition, HDR include in a revised *Water Supply Analysis TM* total system storage for October 15 of each year in the period of record under Run 4 and Run 5. The Network further recommends that HDR use this data to form the basis for a revised Section 2.2 (Carryover Storage) in the *Water Supply Analysis TM*. The revised Section 2.2 should present October 15 total system storage in both table format and as screenshots of DSS-Vue output. (*See* example in CDFW comments, Appendix 1, Figure 3, p. 5).
6. The Network strongly recommends deleting the existing Table 2-1 from the *Water Supply Analysis TM*. As described above, minimum instream flows, unlike consumptive demand, are met in part by uncaptured water. Conflating minimum instream flows with consumptive demand is inherently confusing.
7. Similarly, the Network recommends removal of minimum instream flows from Table 6-3 ("Total System Projected Demands") in the *Water Supply Analysis TM*, and should instead limit the table to Annual Consumptive Demands (currently labeled "Annual System Demand").
8. As stated above, the Network recommends replacing the term "environmental flows" in the *Water Supply Analysis TM* with the more neutral term "minimum instream flows."
9. The Network recommends that NID commission HDR to update the "red-blue" calculator developed during relicensing that quantifies water that belongs to PG&E and NID respectively in ResSim model runs.
10. Finally, the Network recommends the revised *Water Supply Analysis TM* include analysis of the opportunity for NID to acquire the Lower Drum Hydroelectric Project and partially re-operate it to prioritize water supply over power generation.

V. Comments on the Use and Policy Implications of the *Water Projections Memoranda*

Fundamental to the Network's concerns and recommendations is the overall purpose of the Water Planning Projection documents.[36] The Water Planning Projection documents utilize sophisticated models to analyze a particular set or range of inputs and assumptions. The models themselves are tools that allow a variety of inputs and assumptions to be evaluated and reported

[36] *See* Nevada Irrigation District's 2020 Water Projection documents generally, *Hydrologic Analysis TM*, *Water Supply Analysis TM*, and *Water Demand Projection Model Update.*

as needed.[37] The documents as presented are based on a particular set of inputs to the models at a point in time. As NID pointed out in its web document, *How NID Uses Water Planning Projections,* "[t]here is a wide range of assumptions that can be made for any particular data point, all of which may be equally valid." [38]

NID should continue to make use of the tools it has developed to engage the public in considering different assumptions and evaluating different outcomes. For instance, different approaches to a 5-year drought, as discussed above and already begun by NID, is only one of many potential assumptions that should be tested. NID can draw many different subjective conclusions from these documents because they turn on District policy decisions. It will be helpful for NID Board and staff, and for the general public, for the water planning documents to begin to describe the interaction between policy decisions and water supply and demand assumptions and outcomes.

Requests and Recommendations:

1. NID will need to consider costs and risks on a variety of issues and levels, and will need to weigh various tradeoffs of costs and risk. The Network recommends that NID develop a policy outline document that describes some of the major policy decisions NID must make in considering future water planning.
2. The Network recommends that one policy area in a policy outline document focus on NID's need to address and prioritize the degree to which NID devotes resources to maintaining and upgrading existing infrastructure, including the watershed itself.
3. The Network recommends that a second policy area that NID focus on is the degree of preference that NID will give to existing customers and uses of water as opposed to new customers and uses.

VI. Conclusion

The Network requests that NID adopt and implement the requests and recommendations enumerated above.

The Network once again thanks NID for releasing these important documents to the public and soliciting comments before incorporating them into the updates of the AWMP and UWMP in 2021. These tools are key for developing District policy priorities that will in turn assist our region to achieve a sustainable water future. The Network recognizes the value of an ongoing dialogue regarding the details of assumptions, model inputs, and model functions to achieve a mutual understanding for water planning purposes.

Thank you for consideration of the Network's comments on NID's Water Planning Projection documents. Please contact Traci Van Thull, Coordinator, Foothills Water Network, if you have any questions.

---

[37] For example, *Water Demand Projection Model Update,* p. 6 states, "The demand model described in Section 5 includes the ability to adjust the growth rate to evaluate the impacts of growth on water demand."

[38] *How NID Uses Water Planning Projections, op. cit.*

Respectfully submitted,

_____

Traci Sheehan Van Thull
Coordinator, Foothills Water Network
PO Box 573
Coloma, CA 95613
traci@foothillswaternetwork.org

_____

Melinda Booth
Executive Director
South Yuba River Citizens League
313 Railroad Avenue, Suite 101
Nevada City, CA 95959
(530) 265-5961 x 205
melinda@yubariver.org

Chris Shutes
FERC Projects Director
California Sportfishing Protection Alliance
1608 Francisco St.
Berkeley, CA 94703
blancapaloma@msn.com
(510) 421-2405

Mike Davis
Associate Director, California Central Valley
River Restoration
American Rivers
120 Union St.
Nevada City, CA 95959
mdavis@americanrivers.org

Dave Steindorf
California Field Staff
4 Baroni Dr.
Chico, CA 95928
dave@amwhitewater.org

CALIFORNIA
OUTDOORS

Dedicated to preserving, promoting, and experiencing California's unique rivers.

PO Box 401
Coloma, CA 95613

Nate Rangel
President
California Outdoors
P.O. Box 401
Coloma, CA 95613
nathanjrangel@gmail.com

FLY FISHERS INTERNATIONAL
NORTHERN CALIFORNIA COUNCIL

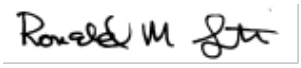
C. Mark Rockwell, Dr

Mark Rockwell
Director and VP of Education
Northern California Council, Fly Fishers International
5033 Yaple Ave.
Santa Barbara, CA 93111
(530) 559-5759
mrockwell1945@gmail.com

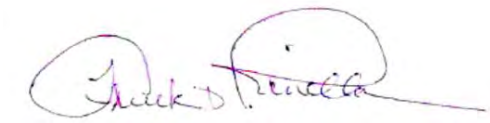
Friends of Bear River

Dianna Suarez

Dianna Suarez
Friends of Bear River
P.O. Box 1174
Colfax, CA 95713
suareztribe@yahoo.com



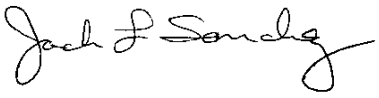
Ronald Stork
Senior Policy Advocate
Friends of the River
1418 20th Street, Suite 100
Sacramento, CA 95811-5206
(916) 442-3155 x220
rstork@friendsoftheriver.org



Frank Rinella
Director and Conservation Education Chair
Gold Country Fly Fishers
303 Vista Ridge Dr.
Meadow Vista CA, 95722
sierraguide@sbcglobal.net

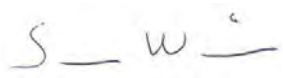
_____

Eric Peach
Boardmember
Protect American River Canyons
P.O. Box 9312
Auburn, CA 95604
parc@jps.net



_____

Jack Sanchez
President and Coordinator
Save Auburn Ravine Salmon and Steelhead
P.O. Box 4269
Auburn, CA 95604
alcamus39@hotmail.com



_____

Sean Wirth
Conservation Committee Chair
Sierra Club - Mother Lode Chapter
909 12th St #202
Sacramento, CA 95814
wirthsoscranes@yahoo.com

_____

Brian J. Johnson
California Director
Trout Unlimited
5950 Doyle Street, Suite 2
Emeryville, CA 94608
(510) 528-4772
bjohnson@tu.org

NID Response to:

Foothills Water Network

Letter introduction states FWN expectations, opinions, and interpretation of AWMP and other NID planning efforts. Comments noted.

Letter Section II, question 1-3
The NID Upper Division runoff average value of 232,600 AFY is what is measured by NID in the Upper Division waterways. It does not include the entire watershed. The hydrological modeling does include the entire watershed, and therefore reports the higher, total watershed average runoff of 383,500. The details of the hydrological climate change modeling are presented separately in the Water Planning Projections, as available on the NID website.

Letter Section III, question 4
No specific citation provided, NID followed the procedures from the "*Handbook for Water Budget Development: With and Without Models*"

Page 10
2016-2020 annual precipitation as measured at the Bowman Lake gage is added in Table 4-2.

Page 16
Comment reflects an expectation for the AWMP. As stated, NID's approach is to address long-range climate planning in Plan for Water.

Page 18
Comment requests additional information beyond the scope of the AWMP.

Page 28
Tables 3-1 and 3-7 indicate the water is "ordered amount".

Page 32
15 percent is the current assumed value as referenced in the RWMP. Section 5.3 identifies efforts to enhance understanding of water loss.

Page 33
Repeat comment. See Letter Section II, question 1-3

Page 34-35
Table 4-1 follows the DWR submittal table format and requirements. Runoff is measured through stream gages and storage is determined through reservoir height and storage curves. A detailed description of NID's water rights and operational strategies is beyond the scope of the AWMP. Commenter's request to better understand NID operational strategies is better suited for Plan for Water.

Water budget calculations added in Appendix.

Page 41
The water budget calculation approach is based on data currently available to NID. Section 5.3 identifies efforts to enhance customer-specific data collection that could be used in the future in water budget models that require such detailed data and inputs.

Page 42
Water budget calculations added in Appendix.

Page 44
Surface outflow assumptions are specifically presented in Section 5.2.2.

Page 45
Plan for Water is the water resources planning process that other NID efforts will use. PFW will provide demand and supply projections, as well as triggering points and water resources management options for NID to include in their infrastructure and other program plans, such as the Raw Water Master Plan.

Water budget calculations added in Appendix.

Page 47
AWMP statute (10826(d)) states "Include an analysis, based on available information, of the effect of climate change on future water supplies." The HDR Hydrology memo is NID's most recent effort on evaluating climate change impacts to water supply.

The Water Planning Projections are a suite of technical memoranda that were published by NID in Summer, 2020. Public meetings were conducted to describe each respective memorandum and receive questions and comments. The hydrologic model is based on the FERC licensing approved model, with the updated model reviewed by California Department of Fish and Wildlife. In addition, extra climate change modeling runs were conducted as requested by the public to include different drought assumptions. The NID website presents all the technical memorandum and additional modeling results, explanation of the planning projections, a glossary, frequently asked questions, and responses to the public's questions identified during the outreach process. The Water Planning Projections are the beginning of the Plan for Water process and there is continued opportunity for discussion and update of the planning assumptions during Plan for Water.

Table 6-1 column heading is updated to state "Percent of Average Annual Historical Runoff at Each Location", as is also stated in the text preceding the table.

As presented in the hydrology analysis in Water Planning Projections, NID believes a future projected 75 percent decrease in runoff during Year 1 of a drought using 1987-1991 hydrology is a significant impact.

Page 48
Table 6-2 is a summary from the Water Planning Projections. See Page 47 response.

The AWMP is not a fractured rock groundwater investigation. The AWMP statutes include groundwater as a supply component. As NID does not use groundwater supply, the plan does not provide additional groundwater analysis. Further information and data would be beneficial to long term NID planning efforts, as listed in Section 5.3.

FWN Letter Dated October 19, 2020 – Water Planning Projection Documents.
This letter provides comments to the Water Planning Projection Documents, developed prior to the AWMP. These comments are better addressed in the Plan for Water process.

To: NID Board and Staff
Regarding: NID 2021 Draft AWMP, (a Raw Water Management Plan)
Date: March 16, 2021
From: Dianna Suarez, Friends of Bear River

Thank you for the opportunity to comment on the 2021 Draft AWMP (report)

1. I am grateful for the new concept of a Water Budget to look holistically at a systems level analysis. This is a big step into the 21st century for NID. It is often difficult for some people to shift into a new way of doing things or looking at things. Seeing water in relationship to the entire landscape provides deeper understanding and an ability to see how formerly "outside factors" affect the mission of the District. Proper focus on a systems level water budget will offer a wider view of all the elements affecting NID and its future ability to work with natural processes while avoiding unneeded expenses and false starts.
2. Page 7 of the report states, "The organization of this 2020 update generally follows the outline presented in the DRAFT DWR 2020 AWMP Guidebook. The final guidebook has not yet been released. This 2020 update **solely addresses the legislative requirements**." Does this mean that NID sees no benefit in developing the tools offered through this process? This statement gives the impression that NID hopes to solely "check the boxes" and nothing more. This unsupported, staff generated report speaks to apparent IGM and staff resistance and reluctance to move forward, in contrast to a vibrant and energetic Board of Directors.
3. Page 8, section 1.2 states, "The most recent Board of Directors' District Goals identified the importance of developing and managing the District's resources in a self-determining manner to protect and provide local control of the water supply." The most recent Board of Directors is not the current Board of Directors. The attempted rewrite of the 2018 Strategic Plan was a failure, and was abandoned when the former GM took over the process and then lost interest in completing the document. This lack of direction moving forward into the integrated water planning process creates a vulnerability from recalcitrant elements within NID "staff" who generally oppose collaboration, cooperation, and innovation. This reflects the same "attitude" as in comment #2. The whole point of this exercise is collaboration, cooperation, and gaining the tools needed for the 21st century.
4. You can lead a horse to water but you can't make them drink. You can give a Water District enlightened and empowering tools but you can't make them use those tools. The DRAFT DWR 2020 AWMP Guidebook is easy to follow and understand. The NID 2021

Draft AWMP is confusing, inconsistent, and of questionable value. I don't know whether the data and assumptions were too scattered, or the District deliberately left out the progression and methodology for their calculations and assertions. The result is an outline of the correct subjects and headings with a disordered conglomeration of verbage instead of clear methodology and findings. As a reader, one can generally tell whether the writer of a report understands the subject based on how easy it is to understand. This writer did not understand the intent of the Guidebook and that may be why this report seems to have an agenda to inflate demand and diminish supply

5. Page 13, Table 2.2 lists 20 new customers a year. With 25,000 customers to date, that means a 0.08% increase annually. (that is 8/100 *of one percent*) If you only count the 5,000 raw water customers, it is a 0.4% (4/10 *of one percent*) annual increase. So this is the "increased irrigated acres that must be met with a District supply", a prelude for Centennial Dam, the hidden agenda. An annual 7% water rate increase is not factored into this random assertion leaving doubt as to its value moving forward.
6. Table 2-3 lists the total District storage capacity **280,085 acre feet**.
7. Page 13 states, "To maintain proper flow rates through customer delivery points the water surface in the canal is maintained at certain levels, as is typical for miner's inch delivery systems. However, this also results in water exiting the canal at the downstream terminus. *Many of these spills are then captured again at the next downstream diversion point* for another canal." This seems to be the excuse for not measuring tailwater waste. It is not wasted because it goes into the ground where NID can pick it up and sell it again thereby ***double counting the water volume sold.*** And as we later find out, NID counts what they can "sell" as equivalent to what is "used" thereby artificially inflating demand. Using the new Water Budget approach, this volume would be accounted for with an inflow to the groundwater system. If this volume was later part of a groundwater system outflow and an inflow to another system, it can be tracked and accurately reported. Lack of tailwater measurement is a glaring deficiency in this plan because this careless and sloppy handling of water leads to an artificially inflated demand and *perceived* shortage of supply; and ultimately to an unneeded billion dollar dam.
8. On page 9 of the draft document, Spaulding Reservoir is not labeled on the map. I also note that most of Bear River and the upper division is not within the NID boundaries.
9. Page 19 of the draft document states, "The District sells agricultural and raw water based on flow and volume basis, depending on customer type, as identified in Table 2-9. The majority of irrigation customers are provided water based on miner's inch deliveries. Some of the wholesale sales to other agencies are based on volume and flow values per the purchase contracts." This method may have worked well when water was abundant

and accuracy didn't matter. When a District decides that they need to destroy an entire River Canyon because they are too lazy and cheap to measure their water accurately, and don't want to spend for meters but choose to commit to millions of dollars for property and a potential billion dollar debt for a dam, then measuring becomes a priority.

10. Page 21. "These values represent the District's best estimate with the existing facilities and information available." There is no basis for the estimated level of accuracy in the report.
11. Page 22, (pg 16 of document) states. "In addition to the hydrologic impacts on NID's supplies, there can also be regulatory reduction as well, as during the last drought the State mandated supply curtailments and NID was not able to access its available supply." Please document and explain the specific curtailments to customers during the drought of 2011-2015.
12. Same page, section 2.3.2 states, "As part of the Plan for Water process, NID has developed a climate change hydrologic model to project and analyse supply availability under different climate change scenarios." **Where is the Water Budget???** It goes on to say, "Findings from this process will then be used to identify and evaluate mitigation measures. Mitigation measures could include the following:" There is a whole lot of verbage after this but none of it addresses the fact that NID does not know how much water is beneficially used. That is a fatal flaw that makes the Plan for Water useless.
13. Page 25, (19 of document), section 2.3.4, Stage 1Drought contingency, states, "Forecast April 1 Available Supply: **234,999** to 211,500 AF." The District has **280,085** AF storage capacity which seems to be well above what is considered adequate. Why then does staff continue to steer analysis toward additional storage, ie. Centennial Dam?
14. I am aware of treated water customers cutting water use, but was told that raw water customers did not curtail use during the last 5 year drought. Please present documentation of raw water use curtailment.
15. Page 35, (29 of document), states, "The District currently does not collect or maintain detailed independent cropping information. The District relies on the self-reported surveys provided by customers. The District also does not collect or maintain detailed parcel-level soil information, irrigation system information, or specific agronomic water requirements for individual customers. As such, the District uses the types of crops and acreages in the self-reported survey to estimate water use components (for example, evapotranspiration (ET) in the water budget calculation as described in Chapter 5." In other words the data is inaccurate and arbitrary. For instance a scientific study, in **Science of the Total Environment**, *entitled Implications of Changing Spatial Dynamics of Irrigated Pasture*, performed specifically in Nevada County within NID boundaries

verified 4,273 acres of irrigated pasture within NID in 2005. Ten years later, the amount of verified irrigated pasture was 3,470 acres, a reduction of 19%. This stands in stark contrast to NID's reported 19,727 acres of irrigated pasture. What are we to make of such a gross overstatement of NID irrigated acres? And the insistence of increasing need for more acres? It simply is not believable and speaks to the lack of public trust in these documents.

16. The total district acreage of 287,000 reports 32,323 irrigated acres. That is 11% of the landbase that uses 90% of the water "delivered". Does this water consuming area supply 90% of the economic revenue? Coupled with the astonishing inaccuracy of the irrigated pasture report, using so much water without a clue on what cost benefits result is unconscionable. Bear River Canyon currently brings in more money from illegally procured property rentals than would result in water sales, but with this scale of inaccuracy, who would ever know?
17. Page 36, (pg 30 of the document) section 3.2, Environmental Water Use. NID has struggled to get on a helpful planning schedule. The District seems to be constantly behind the curve when it comes to planning and often puts "the cart before the horse." This results in massive waste of money and depletion of resources. The first problem was the failed 2018 Strategic Plan Update. The second is the failure to complete or even consider an Environmental Water Management Plan. If that had been done, maybe this section would not be woefully inadequate. An understanding of the environmental water budget could offer many avenues to meet stewardship requirements while minimally impacting water sales and delivery. Instead, the District has chosen to take an oppositional stance to "State Regulations". Is it really the State's job to force NID toward being the "Watershed Steward" of its Vision Statement? There are values for all the Environmental Resources listed in Table 3.3 and NID knows the acreages from past environmental documents, but simply chooses to ignore that these entities exist. This is the underlying system from which NID takes its abundance of water. Maintaining the environmental system creates the water supply. An Environmental Water Management Plan is the key to working effectively with nature for water and for life.
18. Page 37, section 3.4. NID has effectively passed on the subject of groundwater. A large number, and possibly the majority of citizens in both Placer and Nevada Counties rely on groundwater wells for domestic water. NID is not interested in groundwater but they have a significant impact on that water source. Continuing to disregard the importance and enhancement of groundwater violates the public trust. Engaging with the groundwater portion of the Water Budget model would begin to educate everyone around this evolving resource.

19. Page 47, section 5.1.1 states, “Converting the agricultural farm gate delivery mechanism to a metering systems that utilizes enclosed, pressure pipe methods will be an extensive and costly process that NID has yet to implement.” Wouldn’t that be better and more prudent than destroying a River Canyon, the Nisenan Cultural connection to their Sacred River, Sacramento Region river recreation and fish access promised for perpetuity, and a billion dollar debt? Stepping up to implement accurate water measurement is something that the District will be compelled to do in the future as water becomes important statewide. Why not start now?
20. Page 53, Table 6.2, States, “A five-year historic drought was input into the hydrology, with results presented in Table 6-2. Note the projected runoff values are solely based on the hydrologic characteristics of the five-year drought selected, and a different five-year period will result in different results. Results indicate the watershed is significantly impacted in this drought condition, with runoff reducing up to 75 percent in the early drought period, and 50 percent in later drought period.” This result has no basis in fact because we don’t know where the figures come from. Others have addressed this issue and it remains interesting which sub basins were included in each result. On another table NID has asserted a 450,000 acre foot runoff. The real runoff is clearly a mystery and making such drastic statements based on nothing is designed to create fear-mongering and nothing more.
21. Page 54, Section 6.2, states, “Local climate change impacts will likely affect current supply source options. There are approximately 52,000 parcels in the District’s service area. Only approximately 25,000 receive NID treated or raw water. It is assumed the remaining 25,000 parcels are served by fractured rock wells or are undeveloped. A prolonged drought, or increased winter runoff could reduce the amount of water that percolates into the rock fractures, reducing the amount of fractured rock groundwater. This in turn could cause private wells to be insufficient for use. Failing wells will likely cause an increase in the NID customers and subsequent demands, as existing residences will need to connect to the water system.” This is the plan.
    This is interesting but not accurate. The entire Bear River watershed is an underfit system meaning that the River itself can transport many times the current flow and indeed did at one time have the whole upper Yuba watershed running in the Bear. The headwaters of the Bear are below the seasonal snow line and unaffected by the projected lack of snow. Increased runoff will actually increase groundwater storage within the Bear River watershed.

Comments on 2021 Draft AWMP, (a Raw Water Management Plan)
Dianna Suarez 3/16/21

I will supply photos of these extensive flood plains that Bear River has to offer. Increased runoff would increase groundwater storage.

I have spent lots of time witnessing and documenting groundwater storage in Bear River canyon. Please see my youtube channel at this link. https://www.youtube.com/channel/UCXSs2sGAHUNrjp-B5A7altA/videos?view_as=subscriber

Thank you for the opportunity to comment,

Dianna Suarez,

[redacted]

NID Response to:
Dianna Suarez

1. No specific edits and/or comments regarding the AWMP are included in the comment.

2. Plan for Water was envisioned three years ago to provide the planning efforts needed to prepare the 2020 UWMP and AWMP. Due to delays in the PFW process and State-mandated deadlines for the 2020 UWMP and AWMP, NID needs to create the UWMP and AWMP updates without the benefit of completing the PFW process. Therefore, the UWMP and AWMP are developed per regulatory requirements, and the long-range planning and management options are postponed to the better-suited PFW process.

3. No specific edits or question regarding the AWMP are included in the comment.

4. No specific edits or question regarding the AWMP are included in the comment.

5. No specific edits or question regarding the AWMP are included in the comment.

6. No specific edits or question regarding the AWMP are included in the comment.

7. Improving canal water accounting is addressed in Section 5.3.

8. Spaulding Reservoir is not owned by NID.

9. No specific edits or question regarding the AWMP are included in the comment.

10. As stated, the estimates represent the District's best estimate based on the data available.

11. In 2015 Governor Brown issued Executive Order B-29-15 mandating 25 percent reduction in urban potable water usage. The order was later revised and NID was mandated to reduce demands by 36 percent. Additional information on State Board and Governor actions during the most recent drought are available on the State Board website.

12. The water budget is presented in Chapter 5, with supporting calculations in the appendix.

13. No specific edits or question regarding the AWMP are included in the comment.

14. During the 2015 drought, potable water customers were mandated to reduce demands and NID requested raw water customers voluntarily reduce demands.

15. Crop report information relies on customer survey responses. Customer self-definition of irrigated pasture may be different than source cited.

16. No specific edits or question regarding the AWMP are included in the comment.

17. No specific edits or question regarding the AWMP are included in the comment.

18. The AWMP is not a fractured rock groundwater investigation. The AWMP statutes include groundwater as a supply component. As NID does not use groundwater supply, the plan does not provide additional groundwater analysis. Further information and data would be beneficial to long term NID planning efforts, as listed in Section 5.3.

19. No specific edits or question regarding the AWMP are included in the comment.

20. As stated in the text, the projected climate change impacts are summarized from the Hydrologic Analysis Technical Memorandum – Final Report (HDR, 2020). The analysis is part of the NID's Water Planning Projections that have been presented to the public in workshops and are available for review with other public comment and response information on the NID website.

21. No specific edits or question regarding the AWMP are included in the comment.

From:	Otis Wollan
To:	NID Info
Subject:	AWMP comments
Date:	Tuesday, March 16, 2021 11:54:19 AM

To: NID Board and Staff
Regarding: NID 2020 AWMP comments
Date: March 16, 2021

From: Otis Wollan
Placer County Resident, and former 5 term PCWA Director
NID Stakeholder, as proposed NID projects impact my Placer County property directly

Thanks to NID for the opportunity to comment on the Draft Agricultural Water Management Plan (AWMP). I would like to make some overall comments before addressing the particulars of this once-in-every-five-years planning exercise. The Draft AWMP was rushed, and the process choppy and disrespectful of public interest and input. But worse is that in my view the AWMP has at least two fundamental flaws that make the document nearly useless as a tool for planning, and may not even satisfy the basic reporting requirements mandated by DWR. First some process observations:

- There was very little time between the release of the AWMP and the Board workshop. This doesn't allow enough time to compare to previous AWMP's from NID, or for comparison with plans that are in process with other agencies.

- Apparently, at least one Boardmember had not even taken the time to read the AWMP. Perhaps there was not enough time for the governing board either?

- The consultant's Powerpoint presentation did not match the Draft AWMP. Graphs were in a different format, and were composed differently. The new information in the Powerpoint was confusing, with no time for analysis before oral comment.

- On the day after the Board workshop, I discovered that the AWMP appendices link that was provided with the agenda is a 294 page document that includes the Powerpoint which was presented on March 10. Yet on March 11, the AWMP appendices link provided on the NID website is still the earlier March 3 version which was 212 pages, and I had depended on the website draft for my review. The material provided the public still as of this writing (March 11) is inconsistent. This inconsistency cost me personally a couple of hours of time simply tracking down the discrepancies in the background material provided by NID, and is the source of genuine annoyance. It is five days before the comment period ends, and the links

provided the public are still not consistent.

- Staff stated that this Plan was actually not a plan at all, but a report on past activities. A quick comparison to the 2015 NID AWMP showed there was a lot of material in the 2015 AWMP that was useful for planning purposes, but that these graphs and information are not contained in the current 2020 Draft. Inconsistency of content between the two documents is confusing; further, inconsistent formatting makes comparison and analysis challenging.

The fact that NID Staff does not consider this report an actual plan is a missed opportunity for the Board. NID should be taking every opportunity to refine planning elements, as NID has embarked on a large scale plan for the future, and could benefit by using every opportunity to further that Plan for Water. That said, I would suggest going even further, and using the AWMP as a key planning document, as has PCWA. Please note below the approach taken to these DWR mandated reports by PCWA, that essentially PCWA considers the documents to be planning documents primarily for internal information and guidance, and only secondarily as mandated reports to DWR. The following text box is excerpted from the 2015 PCWA UWMP.

Specific Comments to the NID AWMP: Two Fatal Flaws

In my view there are two fundamental flaws that make this report nearly useless. The first is found in Section 3.2, which is the DWR provided survey template for discovering what agricultural crops the ag water is used for. While the survey is valid for valley agriculture, most of the activity in the foothills is not “agriculture” but is more accurately described as “rural lifestyle”. I point out that over 80% of the information gathered is so general that it does not begin to describe the true land use patterns, and thus is useless for planning.

The second fatal flaw is that the fundamental method used for measuring the quantity of water delivered to the “farmgate” is the miner’s inch orifice. This device does not measure water quantity; it describes and caps maximum potential delivery over a period of time--- it does not measure the actual amount of water delivered.

Basically, if NID can’t measure the quantity of water delivered, and doesn’t know what most of the water is used for, what good is this AWMP plan? I will attempt to describe these two fatal flaws in more detail.

Section 3.2

Is the NID AWMP report of water use a report on agricultural water use? Or not?

NID uses a self-reported questionnaire to its raw water customers to determine profile of water use. This survey does not provide an accurate picture of water use. Table 3.2 on

pages 29-30 show three categories which exemplify this:

Crop acres	**2016**	**2017**	**2018**	**2019**	**2020**
Forage - Irrigated Pasture	18,867	19,309	19,419	19,702	19,727
other	754	743	722	729	731
Family Garden, Orchard ,YD	6,026	6,146	6,174	6,244	6,409
subtotal 3 categories	25,647	26,198	26,315	26,675	26,867
Total Irrigated Acres	30,629	31,470	31,835	32,205	32,323
3 categories % of total	83.73%	83.25%	82.66%	82.83%	83.12%

Forage - Irrigated pasture is the largest category, almost of the acreage surveyed. What is this water used for? Is it pasture for cattle or sheep? Is it a fish pond? Is it 4H projects? Is it used for horses, which are not an agricultural use? Is it used for hobby farming, or pet animals? Is it fire protection? Is it simply used as a catch all category for a landowner that simply wants to "green it up" with landscaping? Is it extended yard space? Is it water features? Is it ornamentals? or a swimming pool? Is it wasted water, or aesthetic creek maintenance? Or is it just bad data and misreporting?

This category is too large to be such an unknown. Compare how this DWR questionnaire is used in the TID AWMP; the pasture category in that survey showed 5000 acres out of a total of 140,000 acres surveyed. In TID's report, there are no categories that are "catch alls", as this one appears to be. NID customers who are surveyed have no specific categories that describe their water use, and so use this category because their uses do not match specific crops which are more relevant for valley agriculture. NID needs its own survey, and needs good local water use category data and analysis for NID planning, then fulfill the DWR mandate in an appendix, as is the practice at PCWA.

This also raises the question of what is NID's definition of agriculture; presumably, agriculture would have some criteria using commerce as a measure. For example, what gross receipts from agricultural sales is the threshold for commercial agricultural water use? What is defined as small scale or hobby farming? Does filing a schedule F tax return serve as a legitimate criteria?

Accurate information is needed to determine whether the water use is agricultural, or is effectively a luxury use of water for rural lifestyles. Policies and rates need much more detailed levels of information in order to be fair and equitable. A community might decide that agriculture is important for the character of the community, in which case various kinds of support can be implemented. But it is equally likely that social inequities are in place under the current system of lack of information, and that urban treated water rate payers are subsidizing suburban/rural raw water customers for lifestyle amenities/luxuries.

Family Garden, Orchard, YD is another category that does not distinguish between small agricultural uses like a vegetable garden or small orchard, and suburban uses like lawn and

ornamental landscaping.
Together with the “other” category which is a total mystery, these three categories represent more than ⅘ of NID’s agricultural water use (actually 83.12%), or roughly 90,000 AF of the total 110,000 AF of contracted “agricultural” water deliveries.
Not knowing how ⅘ of the water supply is used is just unacceptable. NID will never know if water efficiency can be achieved by agricultural water efficiencies like replacing flood irrigation with sprinkler or drip irrigation, or if the suburban use can be made more efficient by irrigation method improvements or turf replacement or xeriscape replacement of water guzzling ornamental landscaping. Or if the “on farm” (better described as “on site”) water is simply being dumped because it is delivered by gravity, and there is absolutely no incentive for conservation.
Another observation that may be useful is that almost all of the net increase in the volume of raw water deliveries over five years are in these same categories. Raw water deliveries grew by over 5% from 2016 through 2020, and over 80% of that growth are listed as either irrigated pasture or family orchard/garden. What is that growth actually? Is it farming? Is it suburban rural lifestyle use? Again, from the survey, there is no way to determine what is the nature of growth over the past five years. Knowing what that growth was would offer key insights as to what growth and demand will look like in the future. What is most troubling of all is that the subjective unverified data collected by this survey is seriously at odds with scientifically collected and field verified data that was in a study conducted by researchers at the University of California.

Significant mismatch of customer survey data with scientifically collected data.
I refer NID to a study reported in the journal ***Science of the Total Environment*** entitled *Implications of changing spatial dynamics of irrigated pasture, California’s third largest agricultural water use* by Shapero, et al.
The purpose of the study was to demonstrate the efficacy of using remote sensing and object-based image analysis (OBIA) to determine extent and trends in irrigated land use and land cover, and irrigated pasture in specific. The study methodology used as its case study Nevada County and specifically the land area clipped to the boundary of Nevada Irrigation District. Here is a quote from the study’s abstract:
“Due to its significant contribution to agricultural water use worldwide, we develop a methodology to remotely sense irrigated pasture using a California case study. Irrigated pasture is the third largest agricultural water use in California, yet its economic returns are low. As pressures mount for the agricultural sector to be more water efficient and for water to be directed towards its most economically valuable uses, there will likely be a reduction in irrigated pasture acreage. A first step in understanding the importance of irrigated pasture in California is establishing a methodology to quantify baseline information about its area, location, and current rate of loss. This study used a novel object-based image analysis and supervised classification on publicly-available, high resolution, remote sensing National Agriculture Imaging Program (NAIP) imagery to develop a highly accurate map of irrigated pasture in a rural county in California's Sierra foothills. Irrigated pasture was found

to have decreased by 19% during the ten-year period, 2005–2014, from 4,273 to 3,470 acres."

There are significant revelations from this study. As the study intended, it shows the trend in irrigated pasture over the study period of 2005-2014 which is the reduction of irrigated pasture by 19%. But more startling is that acreage total in Nevada County irrigated by NID is only 3,470 acres in 2014. If the reduction trend continued through 2020, that figure could very well be closer to 3000 acres of irrigated pasture in Nevada County. This is a total of irrigated acreage that was scientifically determined by OBIA and field verified.

This is in stark contrast to the acreage figure provided by the NID survey. The NID survey includes both Nevada and Placer County. But the difference is indeed startling. If you more than double the 3000 acres of irrigated pasture land to estimate the amount of irrigated pasture in Placer County, the estimated acreage would be 7 or 8 or 9 thousand acres of irrigated land in NID's total jurisdiction. What a difference compared to the 20,000 acres of irrigated pasture depicted in the NID survey. That implies that the difference between scientifically collected data and the subjectively collected NID survey data might be off by a factor of 2 or even 3.

This discrepancy is jolting. It needs explanation. It begs for a different methodology for use as a basis for agricultural water management planning by NID. This level of discrepancy calls for a much higher level of investigation by NID to discover what is actually going on. At some point and in some venue, would NID please address this study, the shadow it casts over NID's subjective data, and what the trends imply for our future water use.

So, as a layman, I can only rely on my eyes and ears as a local resident for over fifty years. If there were truly 20,000 acres of irrigated pasture in commercial agriculture here, traffic on our rural roads would be two ton flatbeds with farm machinery and cattle/sheep/pig trucks and the like. But what the traffic looks like is a rush hour display of Mercedes Benz, Lexus, Audi and Teslas, with the daytime occasional new pickup pulling a fancy horse trailer. In between are tourist cars of folks just taking a pleasure tour down a country road.

So, is NID's raw ditch water used for agricultural purposes, or is it used for lifestyle luxuries? Which is waning and which is waxing? The answer is non-trivial. NID's narrative over the past seven years has been that the water supply is threatened by growth in demand and reduction in supply from climate change, thus a billion dollar dam is necessary. But what is the rallying cry? NID's urban water customers are not threatened, as their water use is 10% of the water supply pie. Commercial agriculture seems to be a small percentage of the raw water use, so a story about not having water for growing food for our tables doesn't cut the mustard. Will the rallying cry be: NID must not allow any shortage of irrigated pasture for the hobby horses of the wealthy? Knowing what is actually going on and being truthful and transparent is fundamental to the policies and principles that will be the foundation for NID's sustainable future. NID has plenty of work to do just maintaining the operating the enormous and sprawling water distribution system, and supporting/sustaining beneficial uses of its abundant water rights and supply. The water system is a huge gift to the community, and NID does not need to be distracted or derailed

by a fictional narrative based on bad data.

Recommendations:

As a starting point, we need a clear and true picture of what is going on here.

1. get better information from NID customers with a more accurate survey that details the myriad water uses of rural lifestyle in addition to “agriculture”

2. Begin the process of auditing the larger users for truly useful information about how to measure customer water at the gate, how efficiently the customer currently uses water, and what conservation options might conserve more water. Ultimately, the best management practice will be to know the customer---- what is the true volume of water used/needed, and how well does that customer use the water? A full audit of each customer will very likely allow a smart water use that will conserve a very large percentage of the raw water currently delivered. The way to start is with an audit of a varied subset of customers that will provide guidance as to where the best investments can be made, what the costs and benefits of an audit will be, how extensive it needs to be, and what kind of future conservation investments make sense.

3. Begin the process of gathering objective data through a water audit conducted by staff so that at least data can be objective and uniform, rather than self-reported by the customer.

4. Begin to use best available scientific methods for collecting and/or corroborating data. This includes LIDAR and other object-based image analysis, as was used in the study cited above.

A finer grain understanding of how much water is used for what purposes could provide a foundation for actions toward efficiency. Presently, NID is operating in an information vacuum, which cannot serve as the basis for either a legitimate report of what is happening, nor does it provide a basis for planning a sustainable future.

Section 8

There is so much in Section 8 that is not truly informative, and worse, the basic assertion regarding water measurement is simply wrong. The point of this section is to assure that water is being measured accurately. On page 211 in the Appendices (the March 3 version which is still the version linked on the NID website, not the March 10 version which is apparently only available on the link provided on the March 10 Board meeting agenda), NID’s Engineering Manager states that the miner’s inch delivery method “measures customer deliveries”. That is simply not true. The miner’s inch diversion orifice measures the maximum potential delivery at any given time, not the actual delivery. The orifice caps flow so that the contracted amount of water cannot be exceeded. But it does not measure

quantity delivered.
Director Johansen provided in the public workshop an excellent example of this. On his farm, a pond is used, and irrigation water is pumped from the pond. NID water is used to fill the pond at the point of need, usually beginning early summer. Pond storage then supplements NID delivery of 6 miner's inches in the late Fall, when the pond is drawn down. So on this farm, NID deliveries are not needed for the first month(s) of the irrigation season. This is a wise water management regimen, but it also clearly indicates that the miner's inch orifice does not measure the quantity of water delivered.
NID staff insisted that District wide, the contracted water amount was "close" to the actual water delivered as measured at the top of the system. Yet, numerous examples suggest that the actual quantity delivered to customers is considerably less than the contracted amount. Additional examples are listed below. But the point is this. Until NID can actually measure the quantity delivered to the customer, NID will never know the extent of "losses" to evaporation or canal leakage or tailwater waste or other factors. If NID cannot distinguish the amount of water in delivery at the "farmgate" as opposed to tailwater loss, or evaporation loss, or canal leakage or even water theft, NID will never make the right investments in efficiency.
NID staff insists that the system of distribution is well managed by the ditch tenders, and that tailwater waste is minimized by effective oversight and the seat-of-the-pants management from this human observation. As a PCWA Director from 1987 to 2008, I heard that same story countless times. However, PCWA pursued installing telemetry at both the head and tail of canals, and ultimately the data from tailwater measurement justified the installation of automated gates at the head of the canals operated in real time with the telemetry at the tail of the canals. In a private conversation with the previous General Manager at PCWA, after several years of operation, this fully automated management of canal flow appeared to be saving an average of 15% of the total volume delivered over the irrigation season. That same kind of water efficiency may or may not be available to NID in its canals, but it all starts with data, and measuring tailwater flows with telemetry.
Several additional examples of how miner's inch delivery does not accurately measure quantity:

- Director Hull cited an example of a constituent who needed perhaps ½ miner's inch but actually paid for 3 miner's inches to guarantee future delivery as part of property value for a future sale of the property in case the buyer wanted to irrigate the acreage. This paper water purchase is part of the real estate market, not agricultural water management.

- My own experience within PCWA's ditch water system, where on 65 acres we determined we "needed" 3 miner's inches though we could probably get away with 1 ½ or 2, which is why we bought 5 miner's inches as a hedge against drought measures. The water was cheap, and the guarantee against future drought measures

was financially cheap as opposed to the losses we would experience if water was cut back too far. The “wasted” water ran down the creek through the middle of the property, was quite pleasant, and actually supported some small trout. But most of this use of water was clearly a luxury.

- In a private conversation with the water master for a private property owners association that is an NID customer, he offered the following profile:
    - 47 property owners in the association
    - 2 or 3 had direct diversions from NID ditch where they bought for commercial ag purposes of cattle ranching on the larger parcels
    - 22 of the landowners cooperated in the association to collectively buy 34 miner’s inches at one diversion point. Of that collective group:
        - 2 or 3 filed Schedule F tax forms, and those were for horse breeding
        - Only one had any sizeable orchard and garden, and that was not commercial
        - The 18 or so others were basically 10 acre ranchettes that grazed horses
        - The water master characterized the parcels as haphazardly irrigated, using perhaps half the purchased NID water
        - The pastures were poorly managed, so they were mostly irrigating weeds
        - Several of the parcels had extensive landscaping that was not xeriscaped
        - The diversion was by gravity to a holding tank, which cut off the ditch water when it was full. His estimate was that they were using roughly ½ of the contracted amount. (Thus the miner’s inch volume measurement was inaccurate by 50%)

- In general, landowners above the ditches who pump will use less water than they contract for, since pumping is a significant cost for their irrigation water

- In general, landowners below the ditches will tend toward waste. In one case, a family friend, he diverts 3 miner's inches, but needs only one, and uses the other two to simply run through his pond to keep it "fresh". The excess 2 miner's inches then goes down a creekbed, where nearly all of it is eventually lost to evaporation.

There are about as many individual situations and water use profiles in the NID raw water delivery system as there are individual customers. The only way to truly know what is going on is through an audit.

Table 7-2

In this table referring to "On-Farm Irrigation Capital Improvements", NID states: "It is not locally cost effective for the District to finance capital improvements to agricultural customers because due to the District's water rights and supply infrastructure fixed costs, there are no incremental cost savings from potential local on-farm capital improvements."

As indicated from the comments on Section 3 and Section 8, NID does not really know how much water is delivered to the agricultural customer, nor does NID know how well that water is being used by the customer, and therefore there is no way for NID to know if there is any incremental cost savings available to the District through on-site capital improvement investments.

In contrast, the District claims it needs at least 30% more storage from a billion dollar new reservoir, yet at the same time as no clue as to what conservation opportunities exist in its current delivery of water. What if a thorough water audit revealed that 30-50% of current ag water deliveries could be saved through conservation measures? Would that alternative be given equal consideration for costs and benefits as opposed to a new dam/reservoir?

With NID's current lack of knowledge about its actual water deliveries and all the details of its use by the customer, there is no basis for NID's assertion in Table 7-2. NID is effectively abandoning any possibility of the usefulness of demand side management. The only assertion made by NID staff was that conservation investments in on-site customer water use were too expensive and would result in "sticker shock". There is no basis for this assertion of cost versus benefits, nor any comparisons of the benefits and costs of alternative means for meeting customer needs.

Finally, it was disturbing to hear Directors' remarks that intimated that NID information gathering and interaction with customers was some form of "policing" customers. There seemed to be some kind of underlying belief that NID customers had full privacy and private ownership rights to use the water they purchased in whatever way they wanted, and the market for water was a completely laissez faire free marketplace with any data gathering viewed as intrusion and violation of privacy.

It is a very different paradigm to acknowledge that the surface water belongs to all the

people of California (it's in the Constitution), and that NID is a chartered special district of the State for the purpose of stewarding the water rights granted to the District, and that it is the bona fide responsibility of the District to assist customers in understanding water use and water efficient best management practices, and even to assist the customer in many ways to achieve efficient water use.

I would like to make comments at some point to the climate change section of the AWMP. But frankly, I do not have the time I need to study this element of the AWMP. This element was not clearly presented. I did not see clearly the assumptions that NID was using. Basically I found the section confusing, even though I have been studying climate change and water use for a quarter of a century. If NID is going to address climate change, it needs to be done in depth, explaining clearly what are the assumptions, how does NID's approach compare to what others have done, and much more. I hope to see a clear presentation of NID's climate change analysis in the future, but in this rushed AWMP report, my expectations are low that between the draft and the final report, much can be done to make this presentation thorough and understandable for a layman.

Again, thanks for the opportunity to make comments. I wish NID well, and hope that future reports and planning exercises can be better done than this one.

NID Response to:

Otis Wollan

Bullet 1
No specific edits or question regarding the AWMP are included in the comment.

Bullet 2
No specific edits or question regarding the AWMP are included in the comment.

Bullet 3
No specific edits or question regarding the AWMP are included in the comment.

Bullet 4
The Public Hearing version of the AWMP and Appendices was requested by the Board for inclusion in the packet so that they could see the changes made from the first two public workshops as well as include the written public comments prior to the Board agenda deadline. The versions were purposefully titled separately and kept separately for version control and Brown Act purposes.

Bullet 5
NID is using the Plan for Water process as the integrated water resources planning effort, and the UWMP and AWMP as summary and reporting documents to support statute requirements.

PCWA did try to use the 2015 UWMP as their strategic planning document. Based on that experience, PCWA is no longer using that approach, and instead conducting their strategic planning separately and using the UWMP as the summary and regulatory reporting document.

General comments regarding Crop Report Data
The crop report data is customer-response driven as acknowledged in the report. Section 5.3 addresses management objectives to improve crop report data.

General comments regarding farmgate miners inch measuring
Section 5.3 addresses management objectives to improve water measurement.

The remaining comments presenting author's experiences, opinions, research, and anecdotal evidence regarding water management practices are noted.

From:	Jeff Litton
To:	NID Info
Subject:	AWMP Comments
Date:	Tuesday, March 16, 2021 10:48:49 PM

CAUTION: This email originated from outside your organization. Exercise caution when opening attachments or on clicking links from unknown senders.

Thank you to NID for the ongoing work to serve our community, and for making life possible for us here in the foothills. I am extremely appreciative to everyone working at the district and the department of water resources for the thousands of hours and millions of dollars to support our state and local economy. I am concerned about the Draft Ag Water Management Plan because it appears to give data that is both illegal and unsubstantiated by science.

California water code **CHAPTER 1. Definitions and Interpretation of Division [307 - 1062.20] 1004.**
As used in this division, "useful or beneficial purposes" shall not be construed to mean the use in any one year of more than $2^{1}/_{2}$ acre-feet of water per acre in the irrigation of **uncultivated** areas of land not devoted to cultivated crops.

Pastures of customers are not cultivated land, they are grass pastures. The district claims these customers are using 40 inches of water on each of the 19,727 acres of pastures, but 40 inches is 30% larger than the 30 inches dictated by California law. I am not a lawyer, but as this legal code reads, it appears the district is breaking the law. If that is the case, what is the penalty for such a crime, and are there consequences for the people approving it after being informed of the law?

The job of the directors is to ensure the best available data is being used to manage the district. The current practice of relying on customer surveys does not accomplish this, especially when the Pasture category really is a catch all for people who want to just green up their land, have a large lawn, or have animals like horses. There does not appear to be any requirement for this to be commercially used land, and therefor calling its use agricultural is arguably false because it's not producing anything. This is the same as a golf course or park, where the purpose of irrigation is for pleasure, not for production. If golf courses and parks are in the recreation category, then green lawns should be in the same recreation category. Spraying my lawn doesn't mean I'm engaging in agriculture.

It is possible to utilize the best available data which has so far been missing from the AWMP. Thanks to innovative scientific work that is being done by scientists at UC Berkeley, highly accurate scientific data can now be analyzed using aerial and satellite images to measure the amount of irrigated pasture land. This has already been done in Nevada County, and can easily be applied to the rest of the district.

This is an innovative approach that was only developed and published in scientific journals in 2017, so while the technology was not available for past Ag Water Management Plans, it can now be used to guide our district in the direction of accuracy and integrity. This practice should be adopted by the district immediately because the district currently only has the ability to measure raw water customers, not raw water usage by customers. I could put 1 million gallons on my acre or I could put zero, and the district would have absolutely no idea or way to measure that raw water. This scientific method of analyzing actual imagery is a simple and fast analysis that can take place today, before the installation of water meters on raw water customer sites. Arbitrary capricious actions like adopting this plan before actual research has

been done is a step in the wrong direction, and will have lasting consequences.

In fact, the observations done using object-based image analysis by the scientists at UC Berkeley calls into question the integrity of the data presented by the AWMP. It appears there are far fewer acres being irrigated with 40 inches of water than what is reported by the customer survey and presented in this report. Additionally, LIDAR technology additionally has the ability to give actual scientific data revealing the amount of pastures being irrigated within the district. The AWMP says 40 inches of water are applied to each of the 19,727 acres of pasture land on average. In combination with the amount of rain that naturally falls here in the foothills, that combined number exceeds the 60 inches which is the requirement to be considered a rainforest. There are not 19,727 acres of rain forest here in the district, and so we need to start using science to accurately measure the number of acres that are receiving irrigation before this information is used for the Urban Water Management Plan and Raw Water Master Plan. We know that approving the overstated current demand means we could then extend this flawed data into our future demand models, which would likely have dire consequences, and potentially bankrupt the district.

Thank you for your time.

Jeff Litton

NID Response to:

Jeff Litton

Comments regarding crop report data
The crop report data is customer-response driven as acknowledged in the report. Section 5.3 addresses management objectives to improve crop report data.

Comments regarding aerial imagery data
Section 5.3 addresses management objectives to improve crop report data, including using available aerial imagery.

TO:	**Nevada Irrigation District Board of Directors & Staff** **Grass Valley, California** **info@nidwater.com**

FROM:	**Gary Zimmerman** **Nevada City, California 95959** [redacted]

RE: NID 2020 AWMP comments

March 16, 2021

PLEASE ADDRESS & RESPOND to the FOLLOWING COMMENTS:

1. Please explain how the NID Master Plan, Ag Water Management Plan, and Urban Water Plans are coordinated & updated.
   Or are they in the current 2020-2021 planning process?
2. Please explain why and how the COMMENT PERIOD on the AWMP has been extended with the addition of another NID AWMP Meeting.
3. Please explain what models and data were used in the DRAFT AWMP and why use of those models, and the most extreme draught possibility (the five worst years ever…) were appropriate for the Draft AWMP.
4. Were the same models and data used in the NID Master Plan? Urban Water Plan? Other Plans?
5. Is the "extreme model" used in the DRAFT AWMP similar to the models used by other water districts? The DWR? The State of California? Federal Water Agencies?
6. What "CLIMATE CHANGE" Model(s) was used in the draft AWMP? The NID Master Plan? The NID Urban Water Plan?
7. There seems to be considerable confusion between aspects of the DRAFT, different versions, different reports, different data? WHY?
8. The DRAFT PLAN seems to be rushed and hurried, with limited public comment, at least initially. This is an important long-term planning document, that along with the other mentioned planning documents, will have an important effect on the success of NID in the future.
   It seems that NID should be taking their time and using the planning process to ensure success, rather than rushing into failure…

THANK YOU for the OPPORTUNITY to COMMENT on the DRAFT AWMP.

Gary Zimmerman
Nevada City, CA

NID Response to:

Gary Zimmerman

1,8. The 2020 AWMP and UWMP are developed to meet the State regulatory requirements specific to each document. Plan for Water is the planning process that allows for the long-term water resources planning.

2. The draft AWMP was released on March 3, 2021. The comment period was open through the end of the Public Hearing on March 24, 2021.

3-6. The Water Planning Projections are a suite of technical memoranda that were published by NID in Summer, 2020. Public meetings were conducted to describe each respective memorandum and receive questions and comments. The hydrologic model is based on the FERC licensing approved model, with the updated model reviewed by State Department of Fish and Wildlife. In addition, extra climate change modeling runs were conducted as requested by public to include different drought assumptions. The sample drought period shown in the AWMP uses the 1987-1991 hydrology, not the "extreme drought possibility (the five worst years ever…)" as stated by the commenter. The NID website presents all the technical memorandum and additional modeling results, explanation of the planning projections, a glossary, frequently asked questions, and responses to the public's questions identified during the outreach process. The Water Planning Projections are the beginning of the Plan for Water process and there is continued opportunity for discussion and update of the planning assumptions during Plan for Water.

The AWMP reports past customer sales, other uses, and supplies, it does not project demands or supplies. AWMP statute (10826(d)) states "Include an analysis, based on available information, of the effect of climate change on future water supplies." The Water Planning Projections are NID's most current effort to identify the effect of climate change on future water supplies.

7. The Public Hearing version of the AWMP and Appendices was requested by the Board for inclusion in the packet so that they could see the changes made from the first two public workshops as well as include the written public comments prior to the Board agenda deadline. The versions were purposefully titled separately and kept separately for version control and Brown Act purposes.

From: Mary Ann [redacted]
Sent: Monday, March 15, 2021 11:45 AM
To: Ricki Heck <division1@nidwater.com>; Chris Bierwagen <division2@nidwater.com>; Karen Hull <division3@nidwater.com>; Laura Peters <division4@nidwater.com>; Rich Johansen <division5@nidwater.com>
Cc: BoardSecretary <BoardSecretary@nidwater.com>
Subject: ***Possible Spam-QUARANTINED***Draft of Draft Agricultural Water Management Plan

Please accept this concern for the March 16th meeting

I am concerned about recent data and modeling in NID's Water Planning Projections because they were incomplete and seemed to inflate demand. It is unclear to what extent the Water Planning Projections informed the AWMP.

Please make these changes so it can be fairly and fully reviewed.

- Give the public additional time to review the Plan,
- Include comments in the final Plan from the March 24, 2021 Public Hearing, and
- Publish an explanation that states to what degree the Water Planning Projections were included in the Plan.

Respectfully,
Mary Ann Coleman
[redacted]

NID Response to:

Mary Ann Coleman

The draft AWMP was released on March 3, 2021. The comment period was open through the end of the Public Hearing on March 24, 2021. All comments received through the end of the Public Hearing are included in the appendix.

The Water Planning Projections are a suite of technical memoranda that were published by NID in Summer, 2020. Public meetings were conducted to describe each respective memorandum and receive questions and comments. The hydrologic model is based on the FERC licensing approved model, with the updated model reviewed by State Department of Fish and Wildlife. In addition, extra climate change modeling runs were conducted as requested by public to include different drought assumptions. The NID website presents all the technical memorandum and additional modeling results, explanation of the planning projections, a glossary, frequently asked questions, and responses to the public's questions identified during the outreach process. The Water Planning Projections are the beginning of the Plan for Water process and there is continued opportunity for discussion and update of the planning assumptions during Plan for Water.

The AWMP reports past customer sales, other uses, and supplies, it does not project demands or supplies. AWMP statute (10826(d)) states "Include an analysis, based on available information, of the effect of climate change on future water supplies." The Water Planning Projections are NID's most current effort to identify the effect of climate change on future water supplies.

From: **R. Burger** [redacted]
Subject: Against the Centennial Dam Project
Date: March 15, 2021 at 11:08 AM
To: NID Info info@nidwater.com

RB

Dear NID Board:

Building dams to manage water is old technology that destroys habitat, wastes water and burdens residents with unwarranted costs. Ground water storage is a proven technology that saves water where is cannot evaporate, while recharging aquifers. Please consider this option as a better alternative to a dam.

Please note that the customer water usage rates you list in the Draft Agricultural Water Management Plan are over stated and are illegal under California Law.

Roger Burger

Grass Valley, CA

NID Response to:
Roger Burger

Long-range planning issues are addressed in the Plan for Water process and specific infrastructure projects are addressed through the capital planning process.

Crop reports present customer supplied data and are not verified by NID.

From: **Felicia Tracy** [redacted]
Subject: NID Ag Water management plan
Date: March 14, 2021 at 4:04 PM
To: NID Info info@nidwater.com

FT

CAUTION: This email originated from outside your organization. Exercise caution when opening attachments or on clicking links from unknown senders.

To Whom it may concern:

My parents purchased over 100 acres in 1942 from [redacted] At that time NID water had been purchased to irrigate pasture land for dairy cattle as well as to raise up to 3 crops of hay. Throughout the years, Ted Schaps, my father, irrigated the Emigrant Springs Ranch property to provide various livestock….cattle, sheep, and horses with premium forage as well as cutting hay for them until the 1960's. He carefully used water , with a ditch system, reusing runoff to conserve water yet provide beautiful and productive irrigated pastures. NID also provided for a home orchard and water for both domestic and wild animals. It allows for habitat of numerous species. During the past 50 years, this has been primarily a commercial horse ranch, raising Thoroughbred horses, training show and ranch horses, boarding, and giving clinics and lessons. In addition it has also been recently utilized for grazing cattle, sheep, and goats in addition to horses.

Today, Emigrant Springs is essential for fire protection, creating a fire break green belt in an area with few ranches but many small acreage homes. It is a private haven green belt for horseback riding, hunting, and hiking.

Farmers and ranchers take pride in caring for their land and the environment. Water is essential to economically sustain agricultural production. NID pricing has increased out of proportion to the potential revenue realized by those striving for the best use of our foothill properties. A rural lifestyle is one of Nevada Counties greatest assets for all residents. Lands that are protective against wildfires are of great concern for all citizens. It is the ranchers who irrigate who provide those assets to our County; it is they who have shouldered the cost for the benefit of all. The agricultural community helped fund and found NID, and in no way should they targeted financially for urban policies that have required treated water.

I ask you to look beyond your budget concerns, many due to your own errors. Please look to the future of Nevada County and the history and importance of conserving agricultural lands and safe open space and how you can further contribute to sustaining our environment and quality of life for all citizens. Emigrant Springs has been home and the life-blood for four generations in my family. We are doing our best to continue that legacy.

Sincerely yours, Felicia Tracy, Emigrant Springs Horsemanship

NID Response to:

Felicia Tracy

Comment Noted. The Comment does not address the adequacy or accuracy of the document. NID will address more general inquiries concerning long range District planning in the Plan for Water process.

From: **Dawn Forcier** [redacted]
Subject: Centennial Dam
Date: March 14, 2021 at 5:59 PM
To: NID Info info@nidwater.com

DF

CAUTION: This email originated from outside your organization. Exercise caution when opening attachments or on clicking links from unknown senders.
To whom it may concern regarding the March 16 deadline to comment,

I strongly oppose the building of the Centennial Dam. The loss of habitat, homes, historic lime kiln, and Native American historic sites is horribly wrong and unethical!

Update and improve the reservoirs we already have.

Listen to the people who live here and stop letting money and greed exploit us!

Dawn Forcier
[redacted]

NID Response to:

Dawn Forcier

Comment Noted. The Comment does not address the adequacy or accuracy of the document. NID will address more general inquiries concerning long range District planning in the Plan for Water process.

From: **Meg McGuire** [redacted]
Subject: Centennial dam.
Date: March 14, 2021 at 9:25 PM
To: NID Info info@nidwater.com

MM

CAUTION: This email originated from outside your organization. Exercise caution when opening attachments or on clicking links from unknown senders.

I want it known that myself and many others in our community strongly oppose this dam. I haven't met a single person who wants thos to move forward. We are not truly in need of the extra water storage, and losing this section of the river is a huge cultural loss. We already have Rollins, and do not want another muddy, steep sided lake. There is no call to remove people from their homes. I am also troubled by the rumour that extra water would be sold to socal. They built a city in a desert. We should not be raping our natural resources to feed a beast that will never be satisfied.

NID Response to:
Meg McGuire

Comment Noted. The Comment does not address the adequacy or accuracy of the document. NID will address more general inquiries concerning long range District planning in the Plan for Water process.

From: **Teena Schwartz** [redacted]
Subject: Centennial Dam Comments
Date: March 15, 2021 at 11:10 AM
To: NID Info info@nidwater.com

TS

CAUTION: This email originated from outside your organization. Exercise caution when opening attachments or on clicking links from unknown senders.

You have not provided good enough justification for this project. I am currently an NID Customer and I do not agree with this project and believe it should be cancelled. You need to collect water elsewhere so as not to destroy what already exists and ruin the habitat for animals and people who currently reside here. You can do better than this, you just haven't figured it out how yet but you should.

Bestina Schwartz
[redacted]

NID Response to:

Teena Schwartz

Comment Noted. The Comment does not address the adequacy or accuracy of the document. NID will address more general inquiries concerning long range District planning in the Plan for Water process.

From:	Debbie Porter
To:	NID Info
Subject:	NID meeting on March 16, 2021
Date:	Monday, March 15, 2021 1:15:44 PM

CAUTION: This email originated from outside your organization. Exercise caution when opening attachments or on clicking links from unknown senders.

I am writing to show support for the proposed Centennial Dam/reservoir. I live in South County (Golden Oaks) and our area has serious water needs and shortages. We are appreciative of the Potable water systems that NID has supported and also would like to see the creation of a stable water supply for irrigation water. As we all understand, fire danger is very real and when property owners can irrigate their property, it helps with fire suppression. Many wells in south county have failed (either gone dry or changed to unusable water). A new water supply from a new reservoir will help guarantee a good supply of water that can be used to create potable water or for irrigation. I would like to continue discussions I have had with NID about planning for a pipeline to run down Dog Bar Rd. that will carry irrigation water that can be made available for the many neighbors needing a better source of water. I would like to see a plan to supply some of that water to keep the South Wolf Creek water flowing in dry years as this creek supports many species and planes and helps keep down fire worries.

We need to support a plan that keeps our water in the county to provide water security here. There seems to be a constant cry for more recreation areas and this new reservoir would supply that in a planned way. Public access for our many waterways is a real problem - South Yuba River has parking and trash problems that get worse every year as local and out of area people flock to the rivers and lakes. People park (illegally and dangerously) along Dog Bar where it is near the Bear River. A new reservoir will provide parking access, recreational uses (boating, trails, etc) and water storage that will enhance our area.

Hidden Falls park in Placer County has become very popular and many parking and trespassing issues have arisen. Out of area use has overwhelmed the county and that park site.

I see the construction of the Centennial Dam as a win-win for our area.

Please consider going forward for plans to construct.

Debbie Porter

President of the Golden Oaks Association.

[redacted]

NID Response to:

Debbie Porter

Comment Noted. The Comment does not address the adequacy or accuracy of the document. NID will address more general inquiries concerning long range District planning in the Plan for Water process.

From:	Kathleen Madeira
To:	NID Info
Subject:	Centennial Dam
Date:	Monday, March 15, 2021 4:13:53 PM

I've been a resident of Nevada County for 28 years and would like to voice my opposition to the Centennial Dam project. I see no reason for building a dam and sending the water to projects in the valley, while destroying native habitat as well as disrupting native lands for profit while Nevada County residents pay for more expensive water. Please rethink this decision for the good of our county.

Thank you,

Kathleen Madeira

NID Response to:

Kathleen Madeira

Comment Noted. The Comment does not address the adequacy or accuracy of the document. NID will address more general inquiries concerning long range District planning in the Plan for Water process.

From:	Lila Rose Frisher
To:	NID Info
Subject:	Public Comment - opposing Centennial dam
Date:	Monday, March 15, 2021 6:14:11 PM

Hello,

My name is Lila Frisher, and I'm an NID customer and resident in Grass Valley, CA.

I oppose the building of new dams in general. I'm specifically opposed to new dams on Bear River for environmental and native rights reasons.

Thanks,

Lila Frisher

[redacted]

[redacted]

Sent from my iPhone

NID Response to:

Lila Rose Frisher

Comment Noted. The Comment does not address the adequacy or accuracy of the document. NID will address more general inquiries concerning long range District planning in the Plan for Water process.

From:	Louann Carroll
To:	NID Info
Subject:	Dam project
Date:	Monday, March 15, 2021 9:10:36 PM

CAUTION: This email originated from outside your organization. Exercise caution when opening attachments or on clicking links from unknown senders.

I hope the information I've just received about raising water rates and taxes for a dam is not true.

During this extraordinary time, putting additional stress on families who have homes in the area, not to mention tax increases is clearly criminal.

Louann Carroll

Nevada County

Sent from my iPhone

NID Response to:

Louann Carroll

Comment Noted. The Comment does not address the adequacy or accuracy of the document. NID will address more general inquiries concerning long range District planning in the Plan for Water process.

From:	Heidi Hansen
To:	NID Info
Subject:	Fwd: NID Adds Evening Meeting for Public Review of AWMP - Set for Thursday, March 18th at 6:00 p.m.
Date:	Tuesday, March 16, 2021 8:14:40 AM

CAUTION: This email originated from outside your organization. Exercise caution when opening attachments or on clicking links from unknown senders.
Ladies and Gentlemen of the NID Board of Directors,

Thank you for holding a meeting in the evening so that those of us that work Monday through Friday can participate and understand your thinking on various matters affect NID and its customers - of which I am one. I have heard you may be discussing the need to raise rates. In principle I am not opposed to rate increases as long as robust analysis has been completed on the agency's current and forecasted costs to provide the service and any diminishing returns impact of increased water pricing. By the later a mean a reduction in the number of people buying water when rates are raised which in turn offsets the anticipated revenue growth from the pricing increase. Anecdotelly, the last time NID passed the 5 year rate increase plan I saw about a 1/3 of my neighbors stop buying NID irrigation water and much more dry acreage adding to fire danger. Will NID be completing such analysis to support continuing to increase our rates? I please know I understand the cost of everything is up. I just want to see if water pricing can be associated to fire danger and come to the best balance between the two.

I look forward to hearing from you all at the meeting on the 18th.

Heidi Hansen
[redacted]

---------- Forwarded message ---------
From: **Nevada Irrigation District** <nidwater@specialdistrict.org>
Date: Thu, Mar 11, 2021 at 4:38 PM
Subject: NID Adds Evening Meeting for Public Review of AWMP - Set for Thursday, March 18th at 6:00 p.m.
To: [redacted]

(Grass Valley, CA March 11, 2021) – The Nevada Irrigation District (NID) today announced that it has added an additional meeting for the public to review its Public Draft 2020 Agricultural Water Management Plan (AWMP). The meeting, to be held on Thursday, March 18th at 6:00 p.m., will be the second of three opportunities for the public to learn about NID's AWMP.

The Public Draft AWMP is also posted on NID's website and was

reviewed at a Board Workshop on March 10th. The final Public Hearing is expected to be held at the March 24th regular meeting of the NID Board of Directors. Anyone wishing to submit comments on the Public Draft AWMP is encouraged to send them in writing by email to info@nidwater.com. Comments received by the end of the day **March 16, 2021** will be included in the draft report for discussion at the public hearing. All comments received prior to board adoption will be considered and included in the final AWMP.

The California Water Code requires agricultural water providers to prepare an Agricultural Water Management Plan every five years. NID delivers approximately 90% of its water to agricultural customers. The report includes information about NID's roughly 5,600 agricultural customers such as past water usage, conservation efforts, and other management elements. The AWMP must be adopted by the NID Board of Directors by April 1, 2021 and is due to the State Department of Water Resources within 30 days of adoption.

Due to COVID-19, NID is currently holding its meetings via Zoom. Full details and instructions for how to access its meetings are provided on each meeting agenda posted on nidwater.com prior to the meeting. More information about the AWMP can be found on NID's website at NIDwater.com

NID Response to:

Heidi Hansen

Comment Noted. The Comment does not address the adequacy or accuracy of the document. NID will address more general inquiries concerning long range District planning in the Plan for Water process.

From:	song
To:	NID Info
Subject:	damn dam
Date:	Tuesday, March 16, 2021 9:37:48 AM

Building a massive dam and asking the people to pay for it is a HUGE PROJECT and it should INCLUDE PUBLIC MEETINGS... DO NOT GO FORWARD UNTIL PEOPLE CAN HAVE MEETINGS OR IT WILL APPEAR TO BE WHAT IT IS- A PUSHED THING WITHOUT COMMUNITY SUPPORT.

NID Response to:

Song

Comment Noted. The Comment does not address the adequacy or accuracy of the document. NID will address more general inquiries concerning long range District planning in the Plan for Water process.

From:	Barbara White
To:	NID Info
Subject:	meeting March 16 Centennial Dam
Date:	Tuesday, March 16, 2021 12:01:09 PM

I am writing to show support for the proposed Centennial Dam/reservoir. I live in South County (Golden Oaks) and our area has serious water needs and shortages. We are appreciative of the Potable water systems that NID has supported and also would like to see the creation of a stable water supply for irrigation water. As we all understand, fire danger is very real and when property owners can irrigate their property, it helps with fire suppression. Many wells in south county have failed (either gone dry or changed to unusable water). A new water supply from a new reservoir will help guarantee a good supply of water that can be used to create potable water or for irrigation. I would like to continue discussions I have had with NID about planning for a pipeline to run down Dog Bar Rd. that will carry irrigation water that can be made available for the many neighbors needing a better source of water. I would like to see a plan to supply some of that water to keep the South Wolf Creek water flowing in dry years as this creek supports many species and planes and helps keep down fire worries.

We need to support a plan that keeps our water in the county to provide water security here.

There seems to be a constant cry for more recreation areas and this new reservoir would supply that in a planned way. Public access for our many waterways is a real problem - South Yuba River has parking and trash problems that get worse every year as local and out of area people flock to the rivers and lakes. People park (illegally and dangerously) along Dog Bar where it is near the Bear River. A new reservoir will provide parking access, recreational uses (boating, trails, etc) and water storage that will enhance our area.

Hidden Falls park in Placer County has become very popular and many parking and trespassing issues have arisen. Out of area use has overwhelmed the county and that park site.

I see the construction of the Centennial Dam as a win-win for our area.

Please consider going forward for plans to construct. I copied this letter from our Golden Oaks President. I agree with everything she said. Barbara White

8 You and 7 others
1 Comment

Seen by 37

Like

Comment

NID Response to:

Barbara White

Comment Noted. The Comment does not address the adequacy or accuracy of the document. NID will address more general inquiries concerning long range District planning in the Plan for Water process.

From:	mark johnson
To:	NID Info
Date:	Tuesday, March 16, 2021 4:03:08 PM

CAUTION: This email originated from outside your organization. Exercise caution when opening attachments or on clicking links from unknown senders.

An empathic NO on any talk, discussion, planning or voting in favor of the billion dollar boondoggle known as the "Centennial Dam."

ANY BOARD MEMBER WHO VOTES AGAINST THE INTENT OF THE PEOPLE MUST BE REMOVED FROM OFFICE BY ANY MEANS!

Sincerely, Mark Johnson.

NID Response to:

Mark Johnson

Comment Noted. The Comment does not address the adequacy or accuracy of the document. NID will address more general inquiries concerning long range District planning in the Plan for Water process.

From: [redacted]
To: NID Info
Subject: NID Centennial Dam Project
Date: Tuesday, March 16, 2021 4:12:45 AM
Attachments: image001.png

CAUTION: This email originated from outside your organization. Exercise caution when opening attachments or on clicking links from unknown senders.

To Nevada Irrigation District:

I am very worried about the environmental impact of the NID Centennial Dam Project and I vehemently oppose this project. I have comments and questions that I would like addressed.

This Centennial Dam will destroy a vibrant and beautiful stretch of river that brings enjoyment to the mass population of both Placer and Nevada County. It will destroy properties and campgrounds with a lake that will fluctuate with the needs of farmers that are not even in our own county. It is a money-making interest of NID that will not filter back into our community, but instead will be a great cost to both Nevada and Placer residents.

We see dammed lakes, such as Folsom Lake, Shasta Lake, Oroville Lake, Lake McClure, etc. in the middle of summer, even in good water years drawn down as they provide water showing 20 to 100 or more feet of ugly steep bare earth, a basic mud pit. How are native animals who depend on the Bear River for water supposed to access this in the summer? Are you going to provide access for these animals to reach water when the lake is at its lowest point?

We live in an area known for extreme wildfires. The Bear River is easily crossed during fire season by wildlife, such as deer, raccoons, mountain lions, bobcats, bears, etc. during fire season. If you put in a lake, animals would not be able to cross it for safety. What measures are you going to provide for wildlife in case of fire?

What studies have been performed and will be performed to identify any endangered species living on and in the affected areas of the Bear River? We have river otters; can they live in a lake?

If the Bear River Bridge will be flooded, Nevada County residents along the Dog Bar Road/ Magnolia Road corridor will be required to drive to Highway 49 to access I80. This route passes three schools (Bear River High School, Magnolia Middle School and Cottage Hill Elementary School) and a major subdivision (Lake of the Pines) whose population is nearly 4000 people. During morning rush hours, drivers are competing on a 2-lane road with students trying to get to school and people from the subdivision trying to get to work. The dangers of this situation could be absolutely tragic. What studies have been done and will be done to measure the impact on air pollution and the environment in general from the additional burning of fossil fuels to accommodate the extra driving miles?

I understand that the Bear River is full of mercury from historic mining sites. That dredging and bulldozing will stir up this mercury and the warm water of the proposed lake will alter it.

"A significant problem caused by new dams in North America is mercury poisoning. New flooding above a dam removes mercury from the ground that is now underwater. This mercury is deposited on the bottom of the new reservoir. Microorganisms through the process of methylation convert mercury into methyl mercury which is soluble in water. The mercury then can pass through the food chain and eventually reach humans through consumption of fish from the reservoir waters" http://geoscience.wisc.edu/~chuck/Geo106/krohm.html

I am very worried about the impact of our well and ground water. Our water stands at 1800 feet, about the level of the proposed dam when full. How will the lake and dam impact the ground water? What is the potential for contamination of local ground water that local residents depend on for their wells? What is the potential for depletion of and/or diversion of local ground water? What is the potential that our wells will dry up? Who will be responsible for our wells and our safe drinking water if there is contamination or if they dry up?

We are a Registered Organic Farm. If our water is contaminated or if we are forced to use NID water, which has been treated, who will compensate us for the loss of use of our farm?

How will these actions be prevented from harming the abutting property owners and residents from the harmful effects of breathing toxic dust stirred up from the construction activities? We live ½ mile from the river. Will there be medical compensation from the results of toxic dust?

We and our neighbors have a deeded easement to the Bear River. Will we be compensated for that easement?

What is the total cost (best estimate and worst estimate) of the Centennial Dam project? How will the project be funded? Will Nevada County and/or Placer County residents and property owners be taxed to pay for the project? Will California state taxpayers fund the project? Will Federal funds be used?

Who will pay for the rebuilding of roads, bridges, and driveways that will be flooded by the lake? What will be the cost to Nevada County and Placer County taxpayers?

Will the NID sell water from the lake? If so, to whom? Will the water be sold to abutting property owners who currently draw their water from private wells? Nearby Nevada County and Placer County residents? Further county residents such as Lincoln and Roseville? Other developers/water districts?

Will the NID sell electricity generated from the Centennial dam? If so, to whom? PG&E? SMUD? Other agencies or California counties? How will the electricity be available to abutting property owners? To nearby Nevada County and Placer County residents? To further county residents such as Lincoln and Roseville? Other developers? Other states?

What advantage is gained by the abutting property owners who must sacrifice their ownership/use of and access to the Bear River to make money for the NID, utility companies, and developers? How will the current owners share in the wealth generated by the Centennial Dam?

What will be the elevation of the lake water at 100% capacity? At 60% capacity? At 20% capacity?

What will be the peak average yearly water elevation? The median average yearly water elevation? The low yearly average water elevation?

At what percent of capacity will water be released from the dam for flood control? At that percent of capacity, what will the elevation of the water be?

What is the source of water that will fill the Centennial Lake? With Rollins Lake and Combie Lake drawing water from the local Bear River watershed, how much water is predicted to be available beyond their current capacity over the next 10 years? 20 years? 30 years? Does the NID envision drawing water from other sources, such as the Yuba River, to fill Centennial Lake?

If so, are agreements with other water districts and property owners in place? What will be the environmental impact of routing water from those other sources?

What measures will be taken to protect the wildlife that depends on the Bear River for its homes and habitat? Specifically, on my property: river otters, raccoons, foxes, crayfish, and waterfowl. Will affected wildlife by relocated to a suitable/equivalent habitat?

I would like to list alternatives to this dam of which are much better choices:

Optimizing existing facilities, raise existing dams:

- Rollins dam, already studied, NID ownership, 25-40,000 Acre Feet
- Fordyce dam, already studied, PGE partnership, 15-25,000 Acre Feet
- Silver Lake dam, already studied, NID ownership
- Camp Far West, owned by South Sutter Water District (SSWD), under FEMA orders to re-construct spillway for flood safety concerns. Could be modified and raised. Partnership with SSWD, 15-30,000 AF

Meadow restoration options: Bear Valley, Lake Norden

Forest management for water yield and fire safety, can increase yield 10-30%, and hedge against future losses from evapo-transpiration, with biomass utilization for power generation + carbon sequestration

Groundwater recharge ponds using Mehrten Formation to increase storage of the North American River Groundwater Sub-basin.

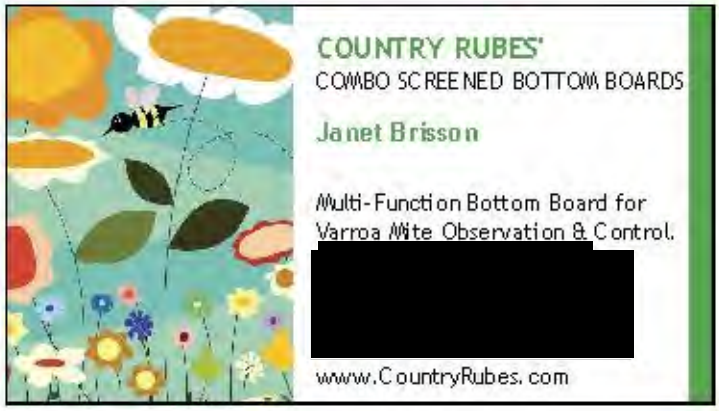
Conjunctive Use Collaboration on existing facilities, like Camp Far West, banking the water in the American River Sub-basin, eliminating evaporation and increasing supplies for emergencies and drought.

Again, I am very opposed to this project.

Janet Brisson
[redacted]

[redacted]

Janet Brisson
Country Rubes Enterprises
[redacted]



NID Response to:

Janet Brisson

Comment Noted. The Comment does not address the adequacy or accuracy of the document. NID will address more general inquiries concerning long range District planning in the Plan for Water process.

From:	Madison Jablonski-Sheffield
To:	NID Info
Subject:	No Dam on the Bear River
Date:	Thursday, March 18, 2021 5:49:35 PM

Greetings,

I am writing in opposition to the proposed Bear River Dam.

I would like all those with decision-making authority on this to take a brief moment to reflect and answer this question: if I was just making this decision on behalf of myself, my kids, grandkids, my community, and the earth, would I make the same decision as I would while getting paid in this job/role?

I hope you'll realize this is not the right choice for our community or the state in the long run. This is a harmful extractive process that has no good end.

Thank you,

Madison Sheffield

Born and raised in Nevada County

Writing in from Sacramento

NID Response to:

Madison Jablonski-Sheffield

Comment Noted. The Comment does not address the adequacy or accuracy of the document. NID will address more general inquiries concerning long range District planning in the Plan for Water process.

March 10, 2021, Workshop
2020 Agricultural Water Management Plan
Public Comments

Mikos Fabersunne:

I wanted principally to respond to this notion of what the measured flows are through farm gates and then talk, or have that blend of the notion of canal automation. I am appreciative that director Hull brought up the question about the actual flow versus what has been purchased. I think that is an important distinction because, what we are seeing, all these numbers are based on purchases, so far that I have seen. What I want to point out when you're talking about using orifice meters, the amount of flow that goes through an orifice is dependent upon the height of the water surface above it. In fact, it's proportional to the square root of that height so if the water surface level is changing, either because there's been a rainfall event or there's runoff seepage into the system, or because upper stream customers have cut off their water as Director Johansen mentioned. He'll go out sometimes of the year and turn off the water, or turn it back on because he doesn't need that flow. Well, when that happens everything downstream of that is affected so all of farm gates downstream are affected because that water level now is different. If there were more additions to the canal from runoff then the height is going to be greater, and consequently the flow is going to be greater. So to put in a statement that the accuracy of the water measurement devices is within 5 to 12 percent, I think is extremely misleading. I think that the accuracy of one measures, at one time, what the flow is through an orifice, it's probably within five percent for a set head. I imagine it's very precise depending upon how well the hole is drilled and so on. But because the fluctuation is so variable over the irrigation season, the rest of the year, it's not where it's not going to be anywhere near that. It might average out that, perhaps as you've mentioned, the demand the actual measured consumption by looking at what flows in and what flows out of the canal at the end is a good way of determining how much has been provided. But it doesn't say much for individual users. I think that if we're talking about the impacts on farmers, and we're talking about having to deal with drought in the future, it's incumbent to not only follow the intention of the Ag Water Management Planning Act of 2017 to improve system efficiency, both at the measurement levels, and with the consumption. I think those have to be controlled better, and or at least measured better. I'm going to mention now, that it talks on page 50, having NID having researched canal automation, that it claims it's going to be installing up to 10 automated control systems over 10 years that's just one a year, but budgeting for each one seems like a really high price. I think automation is something that should be considered. There's ample evidence the Oakdale Irrigation District, for one, has implemented a technology by Rubicon for feed forward, for feedback systems to control canals and everything is interconnected. So even though we don't have the same kind of system, and not everything is level here, we're also basically a downhill system, as we all know. Still there can be those measures that can be applied that

would enable farmers to dispatch their requests and have a fairly rapid response. I don't know that it would take six days to do it because it could be changed at different points in the canal. I don't want to get into the weeds on this now, but suffice it to say, I think the district really needs to take seriously the possibility of investing money into more precise control of what gets metered and delivered to Ag customers. Given that over 60 percent of the water goes to Ag. So I really I hope that the district will take that to heart. I think that if it doesn't, then we're not really taking advantage of an opportunity to save water through water efficiency. The whole thrust of that planning act is on increasing efficiency. This report, unfortunately, when it comes to what efficiency measures are being addressed, the principle one is in using shot creating of canals. We know that cost is $125,000 per mile for it; well that's not really an efficiency measure. It may cut losses, it may prevent erosion of canal sides and bottoms, but it's not really what the intention of this is. We need to be looking at efficient ways of measurement and efficient ways of control. So I encourage the board to rewrite this a little bit and make sure that we're not misleading people about these efficiency measures and then take that to heart when we go into the into the water plan phase of it that's coming up next in the Plan for Water.

John Norton:

Thank you, this has been an excellent workshop and excellent discussion. I have one overarching comment. This is called a plan by the Department of Water Resources in the legislature. In defense of NID this is more of a report than a plan, for the most part. A plan would be a detailed proposal for doing or achieving something. So for the most part, it is not a plan. On page 44, under section 108.2.6(f) it says “The agricultural water supplier shall identify, prioritize, and implement actions for reduced water loss” etcetera. I emphasize the word “shall”. I’m a former regulator and that is the term “shall identify, prioritize, and implement options”, from there the plan goes and says, “There are eight efforts that will be implemented in the near future” Almost all of these efforts say “NID will investigate.” There is no specificity, there is no timeline, there is no identifying, prioritizing and what the actions are to be implemented. I think this is too vague, and too general to comply with that “shall”. Thank you.

Ashley Overhouse:

Ashley Overhouse. I’m the policy manager with the South Yuba River Citizens League. I really want to thank the NID board and staff today, as well as Jim for preparing a fantastic presentation, taking the time to give a board workshop, and the excellent discussion that followed. Thank you, it really helped illuminate some of the more pertinent details of the plan as well as some questions and potential actions moving forward. I actually wanted to give a comment today more on the process, and the public engagement side I appreciated the clarification at the beginning of the presentation about the comment deadline, but I still have concerns now especially that any substantive written comments have to be now submitted even a day earlier. I've now lost another full day, so I have about four days starting tomorrow to submit written comments if we would like them included in the

written record, or the packet that will be submitted to the board and then to DWR. My concern is that it's not giving stakeholders or the public a lot of time. I want to make sure that you know there are a lot of people that are concerned, both members of SYRCL as well as members of our community that will want to express their own public comments. And because you have an opportunity for public comment, of course at the hearing on the 24th, is there any sort of plan to incorporate both the oral as well as written public comments that may be submitted between the 17th and the 24th in some sort of supplemental submission to DWR? I know that that kind of submission and you know the plans of compiling public comments takes quite a bit of effort. I appreciate that, and I know that that kind of job is probably already specified in the contract with Jim. I just I want to put that out there as a request, as not a suggestion, to make sure that if it's not possible to include written comment after the 16th, end of day, in the original packet, if it's possible to then include those subsequent submitted comments to DWR, or at least so the board can view them even after the public hearing altogether?
And alternatively or additionally, at least have one place where all public comment at the end of the month can be found on NID's website? It's a beautiful new website, so I also congratulate you on that. I really appreciate the Ag and Urban Water Management Plans on one page. It's much easier to find now, and if the public comments could also be located there eventually, I would appreciate that, especially with clarifying press release that you put out while we were sitting on this meeting of the updated public comment deadline of March 16. I think it would additionally be helpful if you clarified that, there was additional opportunity for NID to either revise the Ag Water Management Plan, or really clarify capture some of that comparison of the Jim articulated today, of the Ag versus Urban water management plans, even in just a short paragraph so that the public understands that the, connecting the dots, really, frankly for the purpose of the Ag Water Management Plan versus Urban, and the additional opportunities will be presented to them down the line to review that same information and the importance it will have on them as both customers and community members. I think that that's very helpful what we heard today, but may not necessarily be communicated in writing if they are not in tune, or did not listen to the meeting today. Finally, I think that publishing an explanation as to what degree the water planning projections were included in this plan would also be very helpful. I think that the confusion of the significance of the October Water Planning Projections, and then this draft Ag Water Management Plan is still very present, and I think that Jim also went over that a little bit today. So maybe capturing that and writing two to three sentences would be helpful, especially clarifying the report elements of the plan as were articulated in earlier comments versus the forward thinking elements of the plan. So the climate change modeling, the drought plan conservation, the efficient water management practices, you know some of these really key, great forward-looking elements of the plan, so that people understand what part of this is a plan for the District versus what is a report. That could just be articulated in two to three bullet points, even linking to the different pages in the plan, it would it would make all the difference, and would make readability and understanding of this really complex and technically difficult information, that much easier especially with such a short amount of time to review. I appreciate your consideration of these comments I look forward to submitting additional written comments. I really appreciate you taking the time to do this workshop today

Otis Wollan:

Thanks very much, you know I also appreciate the level of detail and the level of questions that the Board have brought to this workshop this morning. I would just, you know with regard to the “is it a plan-is it a report” all of these things, I really invite NID to actually think about it in a whole different way. I compare this draft document to your 2015 Ag plan, and there was more planning information in 2015 than there was in this document in 2020. If you compare what you have, for instance Tuolumne Irrigation District’s Ag Water Management Plan draft, which is up on their website, there's really a world of difference between those two, and a different way of looking at it. For example, in 2015 Urban Water Management Plan from PCWA, here's what they say, “Placer County Water Agency has written this Urban Water Management Plan primarily as a water resources planning tool, and secondarily, to satisfy the requirements of the Urban Water Management Plan Act, to facilitate review by DWR for compliance with the Urban Water Management Plan Act. The data from the body of this planning document has been transferred into DWR tables consistent with the organization of the law”, etcetera, and that can be found in Appendix A. The entire exercise is planning, and only secondarily is it put into a format that goes to DWR for that approval. The way that plays out is really critical. If you look at section three. The questionnaire, that is a DWR supplied questionnaire if you look at the Tuolumne Irrigation District, they look at 140,000 acres, and let's just say the one line of pasture. They only have 5,000 acres of pasture out of 140,000 acres of pasture. You have nearly 20,000 acres of pasture, out of 30,000 acres analyzed. If you add three categories, if you put forage irrigated pasture together with other, and together with family garden and orchard, you're dealing with 83 percent of your report on what you're doing, are in categories that don't tell you anything. I mean within those categories you can't tell if it's a Schedule F farm that is an actual cattle ranch or if it's an Ornamental Japanese tea garden, with a Japanese Ofuro hot tub, and a swimming pool and two acres of turf lawn, and a three-acre private a golf rink link. You have no idea what's going on behind the miners inch measuring device on 83 percent of what you're looking at. So this crop survey doesn't serve you at all. As one of your Directors pointed out earlier, what about ponds, what about, well you can guess what it is. It's not that we have two-ton trucks with farm equipment, and cattle trucks and all of that on our roads. What we have at rush hour is Audis, Lexus, and Mercedes-Benz's. When you get to what's happening here, what's mostly happening is, brand new trucks, towing brand new pickup trucks, towing brand new horse trailers. You know what it's all about and knowing what's going on informs, for instance when you do rates, your ratepayers are going to say we are 100 percent behind subsidizing agriculture for the cost of service, 100 percent. But when you say, how about Bob and Sally's hobby horse, show horse fixation, you're going to have only a percent or two. 98 percent of your people are going to say, “I don't want to subsidize that.” So it goes to rates. It goes to all of these things unless you have the tools in front of you that can actually serve you. You know when you get to section eight; there's been some discussion about how difficult it is to actually measure what's going on. You know even Director Johansen's six-miners inches. You're only actually drawing it in June, July, August, September and October. You know you got many months where you're not using any of those six-miners inches, you're using maybe 60 percent of the water that's

available to you. You can measure the water of a customer give or take 50 percent, and your surveys don't tell you a thing about what's going on beyond behind the miner's inch meter. It seems like the only thing that the staff is really certain about is that the cost is going to be way too high. It's prohibitive, and that's embedded in section 7.2 where you say “it's not locally cost effective to invest anything in agriculture customers,” because of all of these things that you don't know about. It doesn't make any sense. In the context of my engagement over the last five years with NID, there seemed to be no difficulty in embracing the concept of a new storage facility which, paid for over 50 years, would approach two billion dollars. So how can we make these assertions about the costs and the benefits, it doesn’t make sense when you don't know the benefits at all. Anyway these tools are really more important than can be stated, I mean you know one thing about neither TID nor Placer County Water Agency depend on consultants to do these exercises. All of this is done in-house so that the planning information stays with the organization. It's in-house you're working on it constantly you're continually learning and improving and refining all of this stuff. It's not a periodic consultant exercise. PCWA started a department of strategic affairs specifically to manage all of these different mandates and reports in the context of strategic planning, and in the context of ongoing planning and oversight. The Director of Strategic Affairs of the last 10 years was a guy named Andy Fecko, who ended up being the new manager. When PCWA went out there and looked at both in-house candidates and the entire market of candidates, and found that the Director of Internal Strategic Affairs for the last 10 years, was the best guy. So anyway, I invite you to look at it in a different way and to establish the internal capacity in a different way than you've taken so far. So anyway, i have more written comments and thank you again for this opportunity.

Laura Barhydt:

First, I want to, thank you again for the workshop but I really was disappointed that it was canceled for the evening because so many of us working in agriculture are not available in the daytime to participate. So I’m the only one here participating today. Again, thank you for doing this. It has clarified a lot of things for me. I did have a couple of comments I wanted to make; one was the average of 20 new Ag customers a year. I think that, to me, it's going to be low. The reason is, after COVID was here we have realized the importance of local food production. Having it here- no supply chain problems. That way if you can access it locally. We have a really strong group that is really working on increasing the availability and access to foods grown right here in Nevada County. So, I think our demand is going to grow more for the agricultural water. There are more places that are in the south county and western part of the county that, I’m sure, will be used. In addition to the demand that the cannabis industry is going to be increasing its water use. I think 20 new customers a year might
not be enough going into the future. The other thing is, how are we going to continue, excuse me I’m losing my voice here, our ag producers, as you know, they do try to practice conservation of our water, because it is expensive. We don't want to buy more than we are going to use, and a lot of times we're out towards the end of the ditch a lot of times we don't have that full head of water to get us what we need, when we need it, but most of the time we do. It's just one of those things, there's no way to totally know

exactly how much you're getting on any day. It depends on what's happening upstream I guess. Thank you for this opportunity. I have more things I will write and submit, but I'm hoping in the future you'll consider more evening meetings that will allow more people for agriculture when it's actually focused on something to do with agriculture. Thank you.

I just wanted to say thank you and to let you know that on the 17th, is the Ag Commission meeting for Nevada County. So maybe a conflict.

March 18, 2021, Workshop
2020 Agricultural Water Management Plan
Public Comments

Mr. Litton:

Okay well I first just want to thank everyone at NID. I'm very appreciative to all the work that everyone does there, and your crucial role in our in our community. I just wanted to first thank Director Hull, and Director Johansen. I really appreciated both the comments that you both just made acknowledging the adjustments that we really should do to modify our District. Also to Mr. Johansen, thank you very much for your very good point that we are really stewards of this important natural environment, and that's not only in the water that we're taking out of the rivers, but it's also in the water that we're leaving in the rivers, and the rivers that we're not damming and backing up. But I want to look at part of the draft Ag Management Plan and the section that shows that there are pastures, and the amount of water that's being put on there. The plan says there are 19,727 acres of pasture, but the plan says that 66,500 acre-feet are being delivered, That is an average of 40-inches of water are being delivered to each, on average, each of those 19,727 acres of pasture. But as you know, just like it has been discussed here; there's no way to say that with any type of accuracy, because as we've discussed, NID isn't measuring the amount of raw water. So just like Directly Hull said if that person buys 28-inches or 10-inches, whether you open them up or not, there is no way for NID to know that. So to say that for every acre that people are purchasing, forty inches, which is more than a million gallons of water, is being put on every acre within the District is really a stretch. That's 1,086 000 gallons per acre. So, while I certainly agree that in the future what we need to do is start measuring how much water is being delivered, I want to let you know that there are methods that we can use right now using the best available scientific data and that is using aerial imagery. There was a fascinating study that was done by some scientists at UC Berkeley, and they are using what is called object-based image observation. What it does is, basically, uses satellite and aerial imagery to actually measure how much of the acres are being irrigated. What's great is that they, in their scientific research, they already did this study on Nevada County, and in doing that they discovered that there were only about three-thousand-five-hundred, roughly, acres that were being irrigated in 2014. Of course, NID is representing Nevada County as well as Placer, and a little bit of Yuba County. What that data suggests is that if there's only a little more than three thousand acres that are being irrigated back in 2014, it does seem a stretch that there are 19,727 acres being irrigated with 40 inches of water per year. I would just ask that this number be investigated because there is another bit of information, which I'm pulling from the California Legislative Water Code, and that says that areas of uncultivated land, not devoted to crops should not be construed to, in any one year, to have more than two and a half acre feet of water. Because that pasture land definition is so vague within the customer survey it really is just this catch-all where people might be using that for lawns, they might be using that for horses, they might be using it just to green up their

property. I would just say that because it does seem that California is trying to mandate that these numbers are observed, or at least not extrapolated just to put a number of 40-inches per year on all of these 19,000 acres. I just think that using both this scientific analysis UC Berkeley scientists are able to use, and then also too using Lidar, which is another satellite observation to be able to really measure how much is being utilized. One fun factoid, one of those scientists, the lead scientist of the UC Berkeley study, was actually a cattle rancher here in Nevada County. I just thought it was perfect that this person has so much experience and would be a great asset for the District; we'll be able to bring him into that, and to be able to do more proper analyses because, as we all know, the customer survey is just simply inaccurate. I just want to thank you all very much for your time and I appreciate your passion for updating the District and using the best available scientific data.

Nicole Johnson:

Thank you. Ms. Hull thank you for your leadership and representation on the Board. I am not an NID, user but I do have a question about the latent water demand, if we could just circle back to that real quick. Can you tell me, and I think it was mentioned a little bit earlier, regarding if there's lack of infrastructure at a parcel with a dry well, are you including in your calculation people who are, within the next several decades, unlikely to be NID users due to that lack of infrastructure if their well does happen to go dry?

Director Bierwagen: I heard, Nicole, you can correct me, I heard you asked, “have we drawn those boundaries to exclude those areas that will never be served,” was that part of your question?

Nicole Johnson: Yes, or never, not never to be served, but at least within the next couple of decades, at least, if there is lack of infrastructure. I’m just wondering if those types of people who have private wells, if they're being included in your calculation for latent demand?

Heidi Hansen:

Hi thank you for doing this on Zoom. I really appreciate it. It's nice because I live down in Placer County, and so it's quite a ways to go up to one of your meetings. I wanted to take this opportunity because I used to serve on Placer County Farm Bureau's Board, and so I've had the NID folks come to those meetings often and listen to all you guys. One of the things that I know that is very unpopular with many of my fellow Ag folks is the thought that you guys might start metering the Ag water. I wanted to raise one little hand and say I would welcome that only because I live where it's hilly, and so I have to use an electric pump to pump my NID water. So I only irrigate in the season from April to October, about 14 hours a day. So, my example is that I know I'm subsidizing my other Ag users about ten hours a day worth of money. I know you're talking strategy, and what you're going to do long term, so there are people that would probably

welcome metering. I know it's expensive, but I've heard it in past NID discussions about that happening someday. So that's the other thing with the conversation earlier, with the gentleman talking about you guys overestimating what's going on, water on pastures, I would be one of those people because I don't water 24/7. So you're estimating too high for me, anyway, and I'm only six inches. Still six inches of water every year. Thank you.

Roger Ingram:

Good to see you Chris, and Rich, and everybody else on the Board. Just to give a little more input on the miner's inches on irrigated pastures, I run sheep with another guy. We buy miners inches to irrigate about 12 acres of irrigated pastures. Just to reiterate, usually people, if they are buying on a miner's inch basis, might be irrigating 1.3 to 2 acres of irrigated pasture with that miner's inch. The other thing I wanted to see the five years on the previous Ag Water Management Plan showed a relatively static environmental demand of like 10,700 acre feet. Is that projected to go up over the next five years, does anybody know?

So when is the FERC licensing, is it still a long ways away, or a short ways away, or what?

The third thing I wanted to point out is, and I also come from this as a background, as a University of California Cooperative Extension Livestock and Natural Resources Advisor for 31 years here in Nevada and Placer Counties, just the climate change stuff and if the FERC stuff is going to result in more water going for environmental uses. I think, as I recall from many of Chip's presentations, that in a normal year we're kind of still depositing water in the reservoirs until, maybe around the first of July, or something like that, and then drawing down from there. I guess if climate change came about and the norm became more like June 1st, or June 15th, or earlier than that, that there'd be no more inflows into the reservoirs. What would be the impact on agriculture then? I'm just throwing that out as a future thing, maybe to go a little bit more in depth on the drought stuff. Did I hear Rich Johansson correctly, when he was asking the question that irrigated pasture is not considered an irrigated crop?

Doug Roderick: It's not considered a perennial crop.

Roger Ingram: So, is there a reason why that is so?

Chip Close: It's not considered as one of the highest uses of the water during a drought. Our drought contingency plan spells out what the priority for water usage is, and we can get into that in the discussion if you would like, basically, its health, human, and livestock, and so on, and so forth. And we have set a set aside in our drought contingency plan the minimum amounts we need to satisfy those customers for the next year and that's how we determine how much water we have for the current year. It's all based on how much we can carry over into the next year for bare minimum for public health and safety needs.

Roger Ingram: I understand you got the priorities, and I've seen those priorities before, and all those types of things. All I'm trying to say is irrigated pasture predominantly is going to be made up of perennial grass, and so I guess as discussions move forward to at least keep that in mind. I can understand certain crops are not going to need as much water, but it will have a high priority. But just to always keep that irrigated pasture, at least in consideration, is what I would urge.

Brad Fowler:

I just wanted to thank you all for your consideration of agriculture, and Director Hull, you said it pretty accurately, we don't have a lot of agriculture. But the agriculture that we do have is important, and I appreciate that this agency values agriculture, and I think this board respects agriculture. I just wanted to thank you all for that, and thank you for the opportunity to have input and recognize that this water is our livelihood.

Laura Barhydt:

I'm just appalled to find out that irrigated pasture is not as important as a golf course, or a park. I'm sorry, it is perennial, and it's a huge expense for the owner to redevelop that if it is not maintained. I just want to put that out there. It really ought to be considered an irrigated crop, again I wanted to also say thank you for having this tonight and letting us have a chance to speak.

Mr. Litton:

I just wanted to say thank you very much for pointing this out, that the pasture category does seem very important, and I do think there are many important uses within that. I do want to point out though, that the irrigated pasture category is separate than the hay category and alfalfa category, so both of those which are being used for animals, those are separate from the irrigated pasture category. But I do think that this does highlight a really important fact, which is simply that the term "pasture" is used far too broadly within the survey, and I think that

it would really empower the District to specify that, and to really break that down, because I would certainly agree with our other callers who said that they have commercial-agriculture or commercial-ranching that's taking place on those pastures. But I certainly don't think that you know all of the other people who are marking “pasture”. The broad majority of the community who's marking that down, they're not farming or ranching animals. That is the category that you're going to select if you want your lawn to be green, or if you want to keep it green around your house, especially then, what that'll do, is it'll give you the power to be able to say, well we want to limit non-commercial lawns. To me that sounds much more like recreation, because if you are irrigating a place for purpose, then that's agriculture. But if you're irrigating your lawn, that's pleasure. To me that's more like recreation, so I think that splitting this up and doing the survey differently, I think that it'll give you a handle on where the water is really being used. I think a lot of that can, also in the meantime, even within the short next three or six months, that that can easily be analyzed using that satellite data. I just wanted to say thank you very much for bringing this up and I think that it's a very easy change to make. Thank you.

Roger Ingram:

On the discussion that's been taking place, the California department of food and agriculture does have a definition of ag for food and fiber, which would not include horses. I know that there was a couple that did have racehorses in the area, especially like when I first started, and

I think that is why that definition was broadened. But again, I think as you have some meetings about defining this a little bit more, maybe there would be some sort of weighting of criteria to determine if you were going to do something with irrigated pasture as a perennial crop as

far as who would get that priority, if there was going to be any priority, And also, just as at the 78,000 acre feet that is the minimum that is needed. Sure I want to encourage you to keep doing that. I wasn't around at the time, but at the drought in the 70’s, I think after the first year of the drought they didn't necessarily have a minimum, or it wasn't much, and so there was a real shortage the next year. So maintaining that critical minimum is absolutely necessary to ensure that there's going to be water for the next year. So thank you for allowing me to speak. And thank you for all you have done in getting ready for the meeting and presenting this for everyone. I appreciate it.

March 24, 2021 – Public Hearing
2020 Agricultural Water Management Plan
Public Comments

Jeff Litton:

I just want to make one quick statement, then ask a quick question. My statement is, to follow up on the points that Jim Crowley made in the previous meeting on the 18th, which is that in a very serious way NID is set at a disadvantage in its infrastructure system and that it really doesn't have a way to monitor effectively how much water is being used. As he mentioned, there are only two stations where surface outflow is being measured, so there's no way to really know how much is being used within the system. Also, there's no way to measure how much farmers are using. So within the document, they're saying it's saying that on these pasture lands that each person is using more than 40 inches of water on these 19,700 acres of pasture but without the ability to measure that, it just seems like bad data. So my point is simply that you can't make a good report with bad data, and so for that reason, I would urge the board to put in a contingency that more effective accurate monitoring practices need to be put in place before adoption. Before these numbers are used for other reports. Because there are ways that that can be done using good science. Because these surveys just are not good science in any way, shape, or form. Then that will empower the district to be able to make better management policies and practices in the future.

My question, as was noted a few minutes ago, that there was an accusation on social media of illegal actions by NID. It was a question, and it's a question that I still have. I did post on social media, stating this, reading from the Water Code, saying section item 1004, “as used in this division, useful or beneficial purposes shall not be construed to mean the use in any one year of more than two and a half acre-feet of water per acre in the irrigation of uncultivated areas of the land not devoted to cultivated crops”. So because this bad data is being used from this customer survey and people are saying that whether they're watering their lawns or whatever because that number and in this report, it's saying 40 inches. Whereas the California Code says 30-inches. I’m not accusing the district of doing something illegal, but it is a question which is, is it illegal? So I would be interested to hear the answer to that if that can be addressed in this meeting. Thank you very much I appreciate your time.

Syd Brown:

I just want to say that I’m very disappointed that the red line version that was presented just now was not available to the public. I understand that it was anticipated that there would be more changes as a result of the hearing today, however, it makes it very difficult to be effective on knowing what exactly it is we are allowed to comment on, and what is before us today. If there have been some changes made, or some changes recommended. This morning, I’m going through and comparing the comments that I

submitted, in a timely fashion, before the 16th as requested, and as I went through and was comparing the document as posted online, the current version, with my comments, and I wasted an hour seeing what wasn't incorporated. Only to find out a fair amount of my comments are recommended to be incorporated. So not having this redline version available in the packet is a problem. And I would say that, although I'm pleased that some of the typos are recommended to be corrected, the more substantive comments I made do not seem to be addressed, so I'm disappointed in that. Thank you.

Traci Sheehan:

Good morning board and public, my name is Traci Sheehan, I'm with the Foothills Water Network. I want to start off by thanking the Board for these additional public hearings, both the Board and Staff. This is a big change from past processes. Usually, there's just one meeting like today where you get public comment and then you approve the plan, so it's great that you've had these additional meetings, especially the nighttime one. The network believes it's critical for the public to understand the details and assumptions in all of these plans. Especially because this plan is one of those first steps towards the Plan for Water in the end. This is where the public is getting a better understanding of the data that NID is using in the assumptions. So to be clear, this water management plan is actually the second step in that process, we started with the Plan or Water with the water planning projections in October. I believe it's critical that NID use accurate data and modeling so that the public can understand both our current water needs and our future water needs. I can tell you from the planning projection numbers, we wrote extensive comments on the fact that the public, and we don't understand those numbers. Our October comments point out fundamental problems and omissions with both demand and supply, and with this plan and report that's come out, we remain concerned about recent data and modeling in the projections because they were incomplete, and they seemed to inflate demand. At that time and during that process, we requested we meet with NID to discuss these issues, and we're disappointed that that didn't happen before this plan. But with a great warning about the importance of the Urban Water Management Plan, I think that I'm optimistic that we can meet with NID before the Urban Water Management Plan to address these critical issues.

Okay, so now here are a few specifics. First, we believe that the Agricultural Water Management Plan needs a precipitation table. We're concerned with the climate change analysis that suggests major water shortages in the future. So with five years of drought, NID's climate modeling shows that the watershed would become significantly impacted with a 50 to 75 percent reduction in runoff. It's important to understand that this is a much greater impact than actually occurred during the severe drought in 2011-2014. The methods for those projections are not described, nor are the assumptions in the modeling. So, the Network recommends that NID add a table with the dates of the water years used in these projections, along with the total precipitation of each of these water years. Without that information, the reader is forced to conclude that the analysis itself is not presented appropriately, or that there is reason to cover up the methods and assumptions. And because annual precipitation is a fundamental component of the water budgeting process and is included in DWR's handbook, the Network requests NID add a table with precipitation in each water year type. Another point just came up about

the sub-basins, and it was an edit that happened in table 6-1. The network's question is why didn't the plan include all of the sub-basins? So that is a remaining question that we have. All in all, I believe that it's just critical that before NID venture further down the road towards the Plan for Water, that the modeling and data gaps are completed. You'll see those in our comments. In summary, today we ask that if there are remaining omissions that they get fixed before you adopt this plan. Fix what you can before the deadline, and I know that Syd has prepared, and the Network prepared comments that include what those omissions are. We suggest then you set up a special Board meeting so that you can actually adopt the plan. I also suggest two other things, coming out of Greg's comments this morning. First, or at the beginning of this, is that I do agree that it's a good idea for NID to come back and respond to the different comments in writing, and at a future Board meeting. Then we could have a better understanding of some of the assumptions behind the modeling. It's a way to start the conversation as we move towards the Urban Water Management Plan. I also asked the board to consider how will you commit to some of what you're planning in the future in the resolution that you'll be adopting today, so as we watch the board discuss this and consider next steps, what should be included in that resolution to make sure that the public understands what your next steps are? Thank you.

Ashley Overhouse:

Thank you so much, again this is Ashley Overhouse. I'm the policy manager with the South Yuba River Citizens League, SYRCL. As a member of the foothills water network, we submitted comments on this draft plan before you today, and you can find those starting on page 85 of the pdf that was presented to the Board, and available to the public.

Today, the NID board will consider whether to formally adopt the plan before submitting it to the California Department of Water Resources. While SYRCL is grateful, and echo the Network's comments, that NID gave additional opportunity for the public, we are still concerned that the plan is fundamentally flawed due to its incorporation of the water planning projections from October 2020, and seemingly inflated demand. I would just like to echo Traci's requests that the NID Board, please do not approve the plan as currently drafted, even with the adjustments made today. And thank you for those. We would appreciate responses to the comments at some later date, whether that's before or after adoption. I think that would help both the Network, as well as the public, truly understand the assumptions that were put in the plan. Today, at a minimum, this means additional explanation for methodology. I appreciate that one sentence that was added in terms of discrepancy of sub-basins, but I would appreciate additional explanation, as well as the annual precipitation for water years used in the water management plan, as Traci Sheehan just previously mentioned. A special Board meeting, if needed, before April 1, to adopt the amended plan. Finally, we request, respectfully, that the Board, through a resolution or some other formal action, revisit NID's methodology for drafting and producing water management plans in the context of improving overall District planning for a sustainable water future, before the Plan for Water process begins in Fall 2021.

I really do want to thank Greg for clarifying the intent, purpose, and scope of this Ag Water Management Plan, here before you, at the beginning of this public hearing. I really do appreciate that some of this could be addressed in the Urban Water Management Plan, and I would appreciate the opportunity to do so. I do think that this plan, and the work that has been put into it thus far, is still an important tool to help NID improve efficiencies in the future. And provide information and a record to the public on the District's stewardship of our precious water resources. And that the Ag Water Management Plan and Urban Water Management Plans are two important components that will inform the District's update to the Raw Water Master Plan. I understand that that really is the critical tool for strategic planning into the future, and I look forward to engaging in that process. I also want to thank Jim Crowley for the messages today on the water management objectives to focus on the future for the District. Those bullet points, I think, are just incredibly important. And thank his statement for saying there's a lot of energy around how watershed management can help increase community resiliency in the face of the climate crisis. I think that that is really, truly why we are all here today discussing this, and SYRCL thanks you for that intention as you move forward. Thank you so much for your time.

Matthew

I just want you to consider that water is something there is nobody that I know of, that I've ever met, that can go without for more than just three days. So, the responsibility to manage the water is a life and death situation. And that what you're tasked with affects everyone. Every living thing on this earth really depends on water. So please just take it seriously. If you can't remember what it feels like to go without water, just try it for 24 hours. It's excruciating, and it's like torture. That's all I really have to say, is just take your position seriously and realize that we all can't go without it no matter how hard we want to try, thank you.

Entities who received Notification Letter

Nevada County
Placer County
Yuba County
City of Grass Valley
City of Nevada City
City of Lincoln
Placer County Water Agency
Yuba Water Agency

6 B Estates Water Association
Ali Lane Mutual Water Association
Big Oak Valley Mutual Water Company
Blackford Ranch Water Association
Carmody Special Water District
Chicago Park Water Association
Chili Hill Farms Water Association
Clear Creek Water Association
Cole Country Water Users Association
Countryside Ranch Water Association
Fawn Hill Drive Water Association
Flying R Ranch Water Association
Footehold Estates Water Association
Gold Blossom-Rivera Mutual Water Association
Greenpeace Water Association
HDA Association
Iron Mountain Mutual Water Company
Lake Vera Mutual Water Company
Little Greenhorn Creek Water Association
Meadow Hill Water Association
Melody Oaks Mutual Water Company
Moonshine Water Company
Mount Vernon Estates Mutual Water Company
Mustang Valley Mutual Water Company
Oakcreek Water Association
Ophir Prison Estates Mutual Water
Perimeter Road Pipeline
Quail Hill Acres Rd & Water Systems Association
Redbud Water Association
Ridge View Woodlands Mutual Water Company
Rough & Ready Ranch Estates Mutual Water Company
Rudd Road Pipeline Association
Running Water Inc.
Saddleback North Water Group
Saddleback Water Association
Sierra Foothills Water Association
Sky Pines Mutual Water Association
Streeter Road Water Association
Vian Water Association
Wilkes Pipeline Association

Nevada Irrigation District

Water for Life

December 11, 2020

Jennifer Hanson,City Manager
City of Lincoln
600 6th Street
Lincoln, CA 95648

Dear Jennifer Hanson,

The Nevada Irrigation District (NID) has begun the process of updating its Agricultural Water Management Plan (AWMP) and its Urban Water Management Plan (UWMP) as required by the California Water Code. Because NID is both a municipal drinking water supplier and an agricultural raw water supplier, it is completing both documents which are required to be updated every five years.

The Agricultural Water Management Plan requires an agricultural water provider to present information about its agricultural water customers, water usage, conservation efforts, and other management elements. The AWMP must be adopted by the NID Board of Directors by April 1, 2021.

The Urban Water Management Plan requires all municipal water providers to project its supply and demand over the next 20 years, describe its conservation efforts and impacts, consider drought impacts, describe its water shortage contingency plan, consider indoor and outdoor water budgets, as well as other elements to report progress. The plan is a summary of the water provider's key performance indicators for the next 20 years to support its capabilities to meet customer's demands. The UWMP must be adopted by the NID Board of Directors by July 1, 2021.

NID is notifying you, our customers, and other stakeholders that we have initiated our 2020 AWMP and UWMP update process. As part of the process, NID will hold two public meetings for each plan in the spring to allow public review prior to Board consideration.

Please contact me if you have any questions regarding this notification or NID's AWMP and UWMP update process.

Sincerely,

Doug Roderick, P.E.
Interim Engineering Manager

Nevada Irrigation District

Water for Life

December 11, 2020

Catrina Olson,City Manager
City of Nevada City
317 Broad Street
Nevada City, CA 95959

Dear Catrina Olson,

The Nevada Irrigation District (NID) has begun the process of updating its Agricultural Water Management Plan (AWMP) and its Urban Water Management Plan (UWMP) as required by the California Water Code. Because NID is both a municipal drinking water supplier and an agricultural raw water supplier, it is completing both documents which are required to be updated every five years.

The Agricultural Water Management Plan requires an agricultural water provider to present information about its agricultural water customers, water usage, conservation efforts, and other management elements. The AWMP must be adopted by the NID Board of Directors by April 1, 2021.

The Urban Water Management Plan requires all municipal water providers to project its supply and demand over the next 20 years, describe its conservation efforts and impacts, consider drought impacts, describe its water shortage contingency plan, consider indoor and outdoor water budgets, as well as other elements to report progress. The plan is a summary of the water provider's key performance indicators for the next 20 years to support its capabilities to meet customer's demands. The UWMP must be adopted by the NID Board of Directors by July 1, 2021.

NID is notifying you, our customers, and other stakeholders that we have initiated our 2020 AWMP and UWMP update process. As part of the process, NID will hold two public meetings for each plan in the spring to allow public review prior to Board consideration.

Please contact me if you have any questions regarding this notification or NID's AWMP and UWMP update process.

Sincerely,

Doug Roderick, P.E.
Interim Engineering Manager

Nevada Irrigation District

Water for Life

December 11, 2020

Tim M. Kiser,City Manager
City of Grass Valley
125 East Main Street
Grass Valley, CA 95945

Dear Tim M. Kiser,

The Nevada Irrigation District (NID) has begun the process of updating its Agricultural Water Management Plan (AWMP) and its Urban Water Management Plan (UWMP) as required by the California Water Code. Because NID is both a municipal drinking water supplier and an agricultural raw water supplier, it is completing both documents which are required to be updated every five years.

The Agricultural Water Management Plan requires an agricultural water provider to present information about its agricultural water customers, water usage, conservation efforts, and other management elements. The AWMP must be adopted by the NID Board of Directors by April 1, 2021.

The Urban Water Management Plan requires all municipal water providers to project its supply and demand over the next 20 years, describe its conservation efforts and impacts, consider drought impacts, describe its water shortage contingency plan, consider indoor and outdoor water budgets, as well as other elements to report progress. The plan is a summary of the water provider's key performance indicators for the next 20 years to support its capabilities to meet customer's demands. The UWMP must be adopted by the NID Board of Directors by July 1, 2021.

NID is notifying you, our customers, and other stakeholders that we have initiated our 2020 AWMP and UWMP update process. As part of the process, NID will hold two public meetings for each plan in the spring to allow public review prior to Board consideration.

Please contact me if you have any questions regarding this notification or NID's AWMP and UWMP update process.

Sincerely,

Doug Roderick, P.E.
Interim Engineering Manager

Nevada Irrigation District

Water for Life

December 11, 2020

Kevin Mallen,CAO
Yuba County
915 Eighth Street #115
Marysville, CA 95901

Dear Kevin Mallen,

The Nevada Irrigation District (NID) has begun the process of updating its Agricultural Water Management Plan (AWMP) and its Urban Water Management Plan (UWMP) as required by the California Water Code. Because NID is both a municipal drinking water supplier and an agricultural raw water supplier, it is completing both documents which are required to be updated every five years.

The Agricultural Water Management Plan requires an agricultural water provider to present information about its agricultural water customers, water usage, conservation efforts, and other management elements. The AWMP must be adopted by the NID Board of Directors by April 1, 2021.

The Urban Water Management Plan requires all municipal water providers to project its supply and demand over the next 20 years, describe its conservation efforts and impacts, consider drought impacts, describe its water shortage contingency plan, consider indoor and outdoor water budgets, as well as other elements to report progress. The plan is a summary of the water provider's key performance indicators for the next 20 years to support its capabilities to meet customer's demands. The UWMP must be adopted by the NID Board of Directors by July 1, 2021.

NID is notifying you, our customers, and other stakeholders that we have initiated our 2020 AWMP and UWMP update process. As part of the process, NID will hold two public meetings for each plan in the spring to allow public review prior to Board consideration.

Please contact me if you have any questions regarding this notification or NID's AWMP and UWMP update process.

Sincerely,

Doug Roderick, P.E.
Interim Engineering Manager

Nevada Irrigation District

Water for Life

December 11, 2020

Todd Leopold,CEO
Placer County
775 North Lake Blvd.
Tahoe City, CA 96145

Dear Todd Leopold,

The Nevada Irrigation District (NID) has begun the process of updating its Agricultural Water Management Plan (AWMP) and its Urban Water Management Plan (UWMP) as required by the California Water Code. Because NID is both a municipal drinking water supplier and an agricultural raw water supplier, it is completing both documents which are required to be updated every five years.

The Agricultural Water Management Plan requires an agricultural water provider to present information about its agricultural water customers, water usage, conservation efforts, and other management elements. The AWMP must be adopted by the NID Board of Directors by April 1, 2021.

The Urban Water Management Plan requires all municipal water providers to project its supply and demand over the next 20 years, describe its conservation efforts and impacts, consider drought impacts, describe its water shortage contingency plan, consider indoor and outdoor water budgets, as well as other elements to report progress. The plan is a summary of the water provider's key performance indicators for the next 20 years to support its capabilities to meet customer's demands. The UWMP must be adopted by the NID Board of Directors by July 1, 2021.

NID is notifying you, our customers, and other stakeholders that we have initiated our 2020 AWMP and UWMP update process. As part of the process, NID will hold two public meetings for each plan in the spring to allow public review prior to Board consideration.

Please contact me if you have any questions regarding this notification or NID's AWMP and UWMP update process.

Sincerely,

Doug Roderick, P.E.
Interim Engineering Manager

Nevada Irrigation District

Water for Life

December 11, 2020

Allison Lehman,CEO
Nevada County
950 Maidu Avenue
Nevada City, CA 95969

Dear Allison Lehman,

The Nevada Irrigation District (NID) has begun the process of updating its Agricultural Water Management Plan (AWMP) and its Urban Water Management Plan (UWMP) as required by the California Water Code. Because NID is both a municipal drinking water supplier and an agricultural raw water supplier, it is completing both documents which are required to be updated every five years.

The Agricultural Water Management Plan requires an agricultural water provider to present information about its agricultural water customers, water usage, conservation efforts, and other management elements. The AWMP must be adopted by the NID Board of Directors by April 1, 2021.

The Urban Water Management Plan requires all municipal water providers to project its supply and demand over the next 20 years, describe its conservation efforts and impacts, consider drought impacts, describe its water shortage contingency plan, consider indoor and outdoor water budgets, as well as other elements to report progress. The plan is a summary of the water provider's key performance indicators for the next 20 years to support its capabilities to meet customer's demands. The UWMP must be adopted by the NID Board of Directors by July 1, 2021.

NID is notifying you, our customers, and other stakeholders that we have initiated our 2020 AWMP and UWMP update process. As part of the process, NID will hold two public meetings for each plan in the spring to allow public review prior to Board consideration.

Please contact me if you have any questions regarding this notification or NID's AWMP and UWMP update process.

Sincerely,

Doug Roderick, P.E.
Interim Engineering Manager

Nevada Irrigation District

Water for Life

December 11, 2020

Andy Fecko, General Manager
Placer County Water Agency
P.O. Box 6570
Auburn, CA 95604

Dear Andy Fecko,

The Nevada Irrigation District (NID) has begun the process of updating its Agricultural Water Management Plan (AWMP) and its Urban Water Management Plan (UWMP) as required by the California Water Code. Because NID is both a municipal drinking water supplier and an agricultural raw water supplier, it is completing both documents which are required to be updated every five years.

The Agricultural Water Management Plan requires an agricultural water provider to present information about its agricultural water customers, water usage, conservation efforts, and other management elements. The AWMP must be adopted by the NID Board of Directors by April 1, 2021.

The Urban Water Management Plan requires all municipal water providers to project its supply and demand over the next 20 years, describe its conservation efforts and impacts, consider drought impacts, describe its water shortage contingency plan, consider indoor and outdoor water budgets, as well as other elements to report progress. The plan is a summary of the water provider's key performance indicators for the next 20 years to support its capabilities to meet customer's demands. The UWMP must be adopted by the NID Board of Directors by July 1, 2021.

NID is notifying you, our customers, and other stakeholders that we have initiated our 2020 AWMP and UWMP update process. As part of the process, NID will hold two public meetings for each plan in the spring to allow public review prior to Board consideration.

Please contact me if you have any questions regarding this notification or NID's AWMP and UWMP update process.

Sincerely,

Doug Roderick, P.E.
Interim Engineering Manager

Nevada Irrigation District

Water for Life

December 11, 2020

Willlie Whittlesey,General Manager
Yuba Water Agency
1220 F Street
Marysville, CA 95901

Dear Willlie Whittlesey,

The Nevada Irrigation District (NID) has begun the process of updating its Agricultural Water Management Plan (AWMP) and its Urban Water Management Plan (UWMP) as required by the California Water Code. Because NID is both a municipal drinking water supplier and an agricultural raw water supplier, it is completing both documents which are required to be updated every five years.

The Agricultural Water Management Plan requires an agricultural water provider to present information about its agricultural water customers, water usage, conservation efforts, and other management elements. The AWMP must be adopted by the NID Board of Directors by April 1, 2021.

The Urban Water Management Plan requires all municipal water providers to project its supply and demand over the next 20 years, describe its conservation efforts and impacts, consider drought impacts, describe its water shortage contingency plan, consider indoor and outdoor water budgets, as well as other elements to report progress. The plan is a summary of the water provider's key performance indicators for the next 20 years to support its capabilities to meet customer's demands. The UWMP must be adopted by the NID Board of Directors by July 1, 2021.

NID is notifying you, our customers, and other stakeholders that we have initiated our 2020 AWMP and UWMP update process. As part of the process, NID will hold two public meetings for each plan in the spring to allow public review prior to Board consideration.

Please contact me if you have any questions regarding this notification or NID's AWMP and UWMP update process.

Sincerely,

Doug Roderick, P.E.
Interim Engineering Manager

Entities who received Press Release

Wildlife.ca/gov
USDA.gov
Yubariver.org
Placer County Agricultural Commissioner
Nevada County Agricultural Commissioner
Nevada County Farm Bureau
Placer County Farm Bureau
LWWA.org
Sen.ca
wildlife.ca.org
The Union
Bear Yuba Land Trust (BYLT)
NID Agricultural Customers

Contact: Tomi Riley
(530) 271-6845
Rileyt@nidwater.com

FOR IMMEDIATE RELEASE

NID Preparing Agricultural and Urban Water Management Plans Due to the State in 2021

(Grass Valley, CA December 11, 2020) – The Nevada Irrigation District (NID) is preparing its 2020 Agricultural Water Management Plan (AWMP) and 2020 Urban Water Management Plan (UWMP) as required by the California Water Code. Because NID is both a municipal drinking water supplier and an agricultural raw water supplier it submits both documents.

The Urban Water Management Plan (UWMP) requires all municipal water providers to project its supply and demand over the next 20 years, describe its conservation efforts and impacts, consider drought impacts, describe its water shortage contingency plan, consider indoor and outdoor water budgets, as well as other elements to report progress. The plan is functionally a summary of the water provider's key performance indicators for the next 20 years to support its capabilities to meet its customer's demands. The plan is due to the state every five years, with the next plan due June 30, 2021.

The Agricultural Water Management Plan (AWMP) is similar to the Urban Water Management Plan as both are state-mandated reports due every five years. The AWMP requires an agricultural water provider to present information about its agricultural water customers, water usage, conservation efforts, and other management elements. The AWMP is also due to the state every five years, with the next plan due July 1, 2021.

NID wants our customers and other stakeholders to know that NID has initiated its 2020 AWMP and UWMP update process. As part of the process, NID will hold two public meetings for each plan to allow public input prior to Board adoption consideration. Draft copies of each plan will be available for review in the spring of 2021.

For additional information about the Nevada Irrigation District's AWMP and UWMP update process, please visit NIDwater.com

LEGAL DISPLAY PROOF OF PUBLICATION (2015.5 C.C.P.)

STATE OF CALIFORNIA
County of Placer

I am a citizen of the United States and employed by a publication in the County foresaid. I am over the age of eighteen years, and not a party to the below mentioned matter. I am the principal clerk of **The Auburn Journal**, a newspaper of general circulation, which is printed and published in the **City of Auburn, County of Placer**. This newspaper has been judged a newspaper of general circulation by the Superior Court of the State of California, in and for the County of Placer, on the date of May 26, 1952 (Case Number 17407). The notice, of which the attached is a printed copy (set in type not smaller than nonpareil) has been published in each regular and entire issue of said newspaper and not in any supplement thereof on the following dates, to-wit:

74671

THE NEVADA IRRIGATION DISTRICT
NOTICE OF PUBLIC HEARING

PUBLICATION DATE / DATES:

MARCH 10, 17

I certify, under penalty of perjury, that the foregoing is true and correct.

Signature
TERRY CLARK

Dated in Auburn, California

MARCH 17, 2021

74671

The Nevada Irrigation District
Notice of Public Hearing on the
2020 Agricultural Water Management Plan
Wednesday, March 24 at 9:00 a.m.
Via Zoom

The California Water Code requires that agricultural water providers prepare an Agricultural Water Management Plan (AWMP) every five years. The report includes information about the Nevada Irrigation District's (NID) roughly 5,600 agricultural customers such as past water usage, conservation efforts, and other management elements. The 2020 AWMP must be adopted by the NID Board of Directors by April 1, 2021 and is due to the State within 30 days of adoption.

About ninety percent of all the water delivered by NID is for agricultural use giving life to approximately 32,000 acres of irrigated land in Nevada and Placer Counties. Most agricultural water customers purchase water seasonally, from mid-April through mid-October. NID's raw water is conveyed to customers through a unique network of over 500 miles of canal and is used to grow multiple crops including wine grapes, nursery stock, apples, rice, plums, citrus, grass, alfalfa hay, as well as to irrigate pasture.

Due to COVID-19, the meeting will be held via Zoom. Full details and instructions for how to access the meeting will be provided on the Board meeting agenda posted to **nidwater.com** at least 72 hours before the meeting.

The draft 2020 Agricultural Water Management Plan is available for review on NID's website at **https://www.nidwater.com/ag-urban-water-management-plans**.

PUBLISHED IN AUBURN JOURNAL: MARCH 10, 17, 2021

PROOF OF PUBLICATION
AUBURN JOURNAL

74682

LEGAL DISPLAY PROOF OF PUBLICATION (2015.5 C.C.P.)

STATE OF CALIFORNIA
County of Placer

I am a citizen of the United States and employed by a publication in the County foresaid. I am over the age of eighteen years, and not a party to the below mentioned matter. I am the principal clerk of The Lincoln News Messenger, a newspaper of general circulation, which is printed and published in the City of Lincoln, County of Placer. This newspaper has been judged a newspaper of general circulation by the Superior Court of the State of California, in and for the County of Placer, on the date of November 13, 1951, Superior Court Order Number 16996). The notice, of which the attached is a printed copy (set in type not smaller than nonpareil) has been published in each regular and entire issue of said newspaper and not in any supplement thereof on the following dates, to-wit:

74682

THE NEVADA IRRIGATION DISTRICT
NOTICE OF PUBLIC HEARING

PUBLICATION DATE / DATES:

MARCH 11, 18

I certify, under penalty of perjury, that the foregoing is true and correct.

Signature
TERRY CLARK

Dated in Lincoln, California
MARCH 18, 2021

74682

The Nevada Irrigation District
Notice of Public Hearing on the
2020 Agricultural Water Management Plan
Wednesday, March 24 at 9:00 a.m.
Via Zoom

The California Water Code requires that agricultural water providers prepare an Agricultural Water Management Plan (AWMP) every five years. The report includes information about the Nevada Irrigation District's (NID) roughly 5,600 agricultural customers such as past water usage, conservation efforts, and other management elements. The 2020 AWMP must be adopted by the NID Board of Directors by April 1, 2021 and is due to the State within 30 days of adoption.

About ninety percent of all the water delivered by NID is for agricultural use giving life to approximately 32,000 acres of irrigated land in Nevada and Placer Counties. Most agricultural water customers purchase water seasonally, from mid-April through mid-October. NID's raw water is conveyed to customers through a unique network of over 500 miles of canal and is used to grow multiple crops including wine grapes, nursery stock, apples, rice, plums, citrus, grass, alfalfa hay, as well as to irrigate pasture.

Due to COVID-19, the meeting will be held via Zoom. Full details and instructions for how to access the meeting will be provided on the Board meeting agenda posted to **nidwater.com** at least 72 hours before the meeting.

The draft 2020 Agricultural Water Management Plan is available for review on NID's website at **https://www.nidwater.com/ag-urban-water-management-plans**.

PUBLISHED IN LINCOLN NEWS MESSENGER : MARCH 11, 18, 2021

PROOF OF PUBLICATION
LINCOLN NEWS MESSENGER

Appendix B: 2020 AWMP Adopted Resolution

To be inserted upon final

Appendix C: DWR Plan Review Checklist

Public Draft version using 2015 checklist until 2020 version is finalized by DWR

Appendix D: Nevada Irrigation District Water Service Regulations and Schedules (dated September 18, 2020)

Appendix E: Stormwater Policy #6655

Appendix F: Annual Water Quality Report

Appendix G: Memorandum Describing Nevada Irrigation District Raw Water Measurement Best Professional Practices

Appendix H: Water Budget Calculations

This section is an addition to the March 24, 2021 version of AWMP

Water Budget Method Eto Irrigation Season

2016 -Eto from Cal Poly Irrigation Center data

Eto (AF) = (acres)x((crop Eto inches(/12 inches/ft))

Typical	Year Type

Crop Type	Column Name for Lookup	Acres Irrigated (2016)	April	May	June	July	Aug	Sep	TOTAL
Cereals -Corn	Corn and Grain Sorghum	22	4	4	11	15	12	2	48
Cereals - Rice	Rice	157	18	82	98	123	112	32	466
Cereals - Wheat	Grain and Grain Hay	2	1	1	0	0	0	0	2
Cereals - Other	Grain and Grain Hay	29	12	9	1	0	1	0	22
Forage - Alfalfa Hay	Alfalfa Hay and Clover	116	39	57	61	67	60	47	329
Forage - Hay Other	Pasture and Misc. Grasses	824	269	443	430	525	482	362	2,511
Forage - Irrigated Pasture	Pasture and Misc. Grasses	18,867	6,147	10,141	9,842	12,012	11,037	8,286	57,465
Forage - Silage	Pasture and Misc. Grasses	9	3	5	4	5	5	4	26
Forage - Other	Pasture and Misc. Grasses	59	19	32	31	38	35	26	180
Fruits - Apple	Apple, Pear, Cherry, Plum and Prune	224	33	60	101	135	125	92	547
Fruits - Berries - All	Apple, Pear, Cherry, Plum and Prune	110	16	30	50	67	62	46	270
Fruits - Cherries	Apple, Pear, Cherry, Plum and Prune	58	8	16	26	35	33	24	142
Fruits - Citrus - All	Apple, Pear, Cherry, Plum and Prune	151	22	41	69	92	85	63	370
Fruits - Grapes - Table	Grape Vines with 80% canopy	56	9	17	23	26	24	12	112
Fruits - Grapes - Other	Grape Vines with 80% canopy	627	98	193	259	291	273	134	1,248
Fruits - Kiwi	Misc. Deciduous	23	3	4	9	14	13	10	52
Fruits - Peaches	Misc. Deciduous	100	13	17	36	59	56	41	222
Fruits - Pears	Apple, Pear, Cherry, Plum and Prune	121	18	32	55	73	68	50	295
Fruits - Plums	Apple, Pear, Cherry, Plum and Prune	140	20	38	64	85	79	58	343
Fruits - Other	Misc. Deciduous	112	14	19	41	65	63	46	248
Fruits - Persimmons	Misc. Deciduous	3	0	1	1	2	2	1	7
Fruits - Apricots	Apple, Pear, Cherry, Plum and Prune	1	0	0	0	0	0	0	2
Nursery	Flowers, Nursery and Christmas Tree	383	49	64	139	224	215	158	850
Cannabis	Cannabis	na	--	--	--	--	--	--	0
Nuts	Walnuts	171	26	40	72	116	108	78	440
Nuts - Walnuts	Walnuts	15	2	4	6	10	10	7	39
Nuts - Chestnuts	Walnuts	15	2	4	6	10	10	7	39
Nuts - Pistachios	Pistachio	1	0	0	0	1	1	1	3
Nuts - Almonds	Almonds	13	2	3	5	8	7	5	31
Other	Grass Reference ETo	754	301	438	423	519	477	364	2,523
Golf Course	Grass Reference ETo	984	394	573	553	678	623	475	3,295
Other - Parks	Grass Reference ETo	152	61	89	85	105	96	73	510
Other - Exempt	Grass Reference ETo	0	0	0	0	0	0	0	0
Family Garden, Orchard, YD.	Grass Reference ETo	6,026	2,411	3,505	3,385	4,153	3,812	2,908	20,173
No Report .5M / A	Grass Reference ETo	304	122	177	171	209	192	147	1,017
Pond	Grass Reference ETo	11	3	5	5	6	5	4	28
								Total	93,856.73

Water Budget Method Eto Irrigation Season

2017 -Eto from Cal Poly Irrigation Center data

Eto (AF) = (acres)x((crop Eto inches(/12 inches/ft))

Wet	Year Type

Crop Type	Column Name for Lookup	Acres Irrigated (2017)	April	May	June	July	Aug	Sep	TOTAL
Cereals -Corn	Corn and Grain Sorghum	32	7	9	15	22	19	3	75
Cereals - Rice	Rice	157	18	82	98	123	112	32	466
Cereals - Wheat	Grain and Grain Hay	2	1	1	0	0	0	0	2
Cereals - Other	Grain and Grain Hay	29	10	8	3	0	0	1	23
Forage - Alfalfa Hay	Alfalfa Hay and Clover	134	48	48	69	77	76	47	365
Forage - Hay Other	Pasture and Misc. Grasses	808	248	274	385	510	511	307	2,234
Forage - Irrigated Pasture	Pasture and Misc. Grasses	19,309	5,921	6,549	9,188	12,181	12,213	7,337	53,389
Forage - Silage	Pasture and Misc. Grasses	9	3	3	4	5	5	3	24
Forage - Other	Pasture and Misc. Grasses	189	58	64	90	119	119	72	522
Fruits - Apple	Apple, Pear, Cherry, Plum and Prune	228	48	68	102	138	136	85	577
Fruits - Berries - All	Apple, Pear, Cherry, Plum and Prune	125	26	37	56	75	74	47	316
Fruits - Cherries	Apple, Pear, Cherry, Plum and Prune	58	12	17	26	35	35	22	147
Fruits - Citrus - All	Apple, Pear, Cherry, Plum and Prune	171	36	51	77	103	102	64	433
Fruits - Grapes - Table	Grape Vines with 80% canopy	54	12	17	22	26	22	13	112
Fruits - Grapes - Other	Grape Vines with 80% canopy	631	142	195	258	302	264	155	1,316
Fruits - Kiwi	Misc. Deciduous	24	5	6	9	14	14	9	57
Fruits - Peaches	Misc. Deciduous	103	21	28	40	61	60	39	248
Fruits - Pears	Apple, Pear, Cherry, Plum and Prune	139	29	42	62	84	83	52	352
Fruits - Plums	Apple, Pear, Cherry, Plum and Prune	142	30	43	64	86	85	53	360
Fruits - Other	Misc. Deciduous	114	23	31	44	67	66	43	273
Fruits - Persimmons	Misc. Deciduous	3	1	1	1	2	2	1	7
Fruits - Apricots	Apple, Pear, Cherry, Plum and Prune	1	0	0	0	0	0	0	2
Nursery	Flowers, Nursery and Christmas Tree	371	74	100	145	219	215	140	891
Cannabis	Cannabis	13	3	3	5	8	7	5	31
Nuts	Walnuts	193	41	56	86	125	130	78	516
Nuts - Walnuts	Walnuts	15	3	4	7	10	10	6	40
Nuts - Chestnuts	Walnuts	15	3	4	7	10	10	6	40
Nuts - Pistachios	Pistachio	1	0	0	1	1	1	1	3
Nuts - Almonds	Almonds	13	3	4	6	8	8	5	32
Other	Grass Reference ETo	743	238	243	362	510	511	301	2,165
Golf Course	Grass Reference ETo	984	315	322	480	676	677	399	2,868
Other - Parks	Grass Reference ETo	152	49	50	74	105	105	62	443
Other - Exempt	Grass Reference ETo	0	0	0	0	0	0	0	0
Family Garden, Orchard, YD.	Grass Reference ETo	6,146	1,967	2,008	2,996	4,221	4,226	2,489	17,907
No Report .5M / A	Grass Reference ETo	361	116	118	176	248	248	146	1,053
Pond	Grass Reference ETo	11	3	3	4	6	6	3	24
								Total	87,314

Water Budget Method Eto Irrigation Season

2018 -Eto from Cal Poly Irrigation Center data

Eto (AF) = (acres)x((crop Eto inches(/12 inches/ft))

Typical	Year Type

Crop Type	Column Name for Lookup	Acres Irrigated (2018)	April	May	June	July	Aug	Sep	TOTAL
Cereals -Corn	Corn and Grain Sorghum	32	5	7	17	22	18	2	72
Cereals - Rice	Rice	154	17	81	97	121	110	31	458
Cereals - Wheat	Grain and Grain Hay	2	1	1	0	0	0	0	2
Cereals - Other	Grain and Grain Hay	29	12	9	1	0	1	0	22
Forage - Alfalfa Hay	Alfalfa Hay and Clover	134	45	66	70	77	69	54	380
Forage - Hay Other	Pasture and Misc. Grasses	802	261	431	418	510	469	352	2,441
Forage - Irrigated Pasture	Pasture and Misc. Grasses	19,419	6,327	10,438	10,130	12,364	11,360	8,528	59,147
Forage - Silage	Pasture and Misc. Grasses	9	3	5	4	5	5	4	26
Forage - Other	Pasture and Misc. Grasses	190	62	102	99	121	111	84	579
Fruits - Apple	Apple, Pear, Cherry, Plum and Prune	229	33	62	104	138	128	94	559
Fruits - Berries - All	Apple, Pear, Cherry, Plum and Prune	126	18	34	57	76	70	52	307
Fruits - Cherries	Apple, Pear, Cherry, Plum and Prune	55	8	15	25	33	31	23	135
Fruits - Citrus - All	Apple, Pear, Cherry, Plum and Prune	161	24	43	73	98	91	67	395
Fruits - Grapes - Table	Grape Vines with 80% canopy	50	8	15	21	23	22	11	100
Fruits - Grapes - Other	Grape Vines with 80% canopy	642	100	198	265	298	279	138	1,278
Fruits - Kiwi	Misc. Deciduous	24	3	4	9	14	13	10	53
Fruits - Peaches	Misc. Deciduous	105	13	18	38	61	59	43	232
Fruits - Pears	Apple, Pear, Cherry, Plum and Prune	131	19	35	60	79	74	54	321
Fruits - Plums	Apple, Pear, Cherry, Plum and Prune	144	21	39	65	87	81	60	352
Fruits - Other	Misc. Deciduous	229	29	39	83	134	129	95	509
Fruits - Persimmons	Misc. Deciduous	2	0	0	1	1	1	1	4
Fruits - Apricots	Apple, Pear, Cherry, Plum and Prune	1	0	0	0	0	0	0	2
Nursery	Flowers, Nursery and Christmas Tree	378	48	64	137	222	213	157	840
Cannabis	Cannabis	13	2	2	5	8	7	5	29
Nuts	Walnuts	194	30	46	82	131	123	88	499
Nuts - Walnuts	Walnuts	14	2	3	6	9	9	6	36
Nuts - Chestnuts	Walnuts	12	2	3	5	8	8	5	31
Nuts - Pistachios	Pistachio	1	0	0	0	1	1	1	3
Nuts - Almonds	Almonds	13	2	3	5	7	7	5	31
Other	Grass Reference ETo	722	289	420	406	498	457	348	2,417
Golf Course	Grass Reference ETo	984	394	572	553	678	622	475	3,294
Other - Parks	Grass Reference ETo	221	88	129	124	152	140	107	740
Other - Exempt	Grass Reference ETo	0	0	0	0	0	0	0	0
Family Garden, Orchard, YD.	Grass Reference ETo	6,174	2,470	3,591	3,468	4,255	3,905	2,979	20,667
No Report .5M / A	Grass Reference ETo	444	178	258	249	306	281	214	1,487
Pond	Grass Reference ETo	11	3	5	5	6	5	4	27
								Total	97,479

Water Budget Method Eto Irrigation Season

2019 -Eto from Cal Poly Irrigation Center data

Eto (AF) = (acres)x((crop Eto inches(/12 inches/ft))

Wet	Year Type

Crop Type	Column Name for Lookup	Acres Irrigated (2019)	April	May	June	July	Aug	Sep	TOTAL
Cereals -Corn	Corn and Grain Sorghum	33	7	9	16	23	20	3	77
Cereals - Rice	Rice	96	11	51	61	76	69	20	286
Cereals - Wheat	Grain and Grain Hay	2	1	1	0	0	0	0	2
Cereals - Other	Grain and Grain Hay	29	10	8	3	0	0	1	23
Forage - Alfalfa Hay	Alfalfa Hay and Clover	155	55	56	80	89	87	54	422
Forage - Hay Other	Pasture and Misc. Grasses	853	261	289	406	538	539	324	2,357
Forage - Irrigated Pasture	Pasture and Misc. Grasses	19,702	6,042	6,682	9,375	12,428	12,461	7,487	54,475
Forage - Silage	Pasture and Misc. Grasses	9	3	3	4	5	5	3	24
Forage - Other	Pasture and Misc. Grasses	190	58	64	90	120	120	72	525
Fruits - Apple	Apple, Pear, Cherry, Plum and Prune	239	50	72	107	144	142	89	604
Fruits - Berries - All	Apple, Pear, Cherry, Plum and Prune	138	29	41	62	83	82	52	349
Fruits - Cherries	Apple, Pear, Cherry, Plum and Prune	56	12	17	25	33	33	21	140
Fruits - Citrus - All	Apple, Pear, Cherry, Plum and Prune	166	35	50	74	100	99	62	420
Fruits - Grapes - Table	Grape Vines with 80% canopy	52	12	16	21	25	22	13	108
Fruits - Grapes - Other	Grape Vines with 80% canopy	669	150	207	274	320	280	164	1,394
Fruits - Kiwi	Misc. Deciduous	21	4	6	8	12	12	8	50
Fruits - Peaches	Misc. Deciduous	112	22	30	44	66	65	42	269
Fruits - Pears	Apple, Pear, Cherry, Plum and Prune	128	27	38	57	77	76	48	323
Fruits - Plums	Apple, Pear, Cherry, Plum and Prune	148	31	44	66	89	88	55	373
Fruits - Other	Misc. Deciduous	208	41	56	81	122	120	78	499
Fruits - Persimmons	Misc. Deciduous	2	0	1	1	1	1	1	5
Fruits - Apricots	Apple, Pear, Cherry, Plum and Prune	1	0	0	0	0	0	0	2
Nursery	Flowers, Nursery and Christmas Tree	376	75	101	147	222	218	142	905
Cannabis	Cannabis	14	3	4	5	8	8	5	34
Nuts	Walnuts	196	41	57	87	127	132	79	524
Nuts - Walnuts	Walnuts	12	3	3	5	8	8	5	32
Nuts - Chestnuts	Walnuts	12	3	3	5	8	8	5	32
Nuts - Pistachios	Pistachio	1	0	0	1	1	1	1	3
Nuts - Almonds	Almonds	13	3	4	5	8	7	4	31
Other	Grass Reference ETo	729	233	238	355	500	501	295	2,123
Golf Course	Grass Reference ETo	986	315	322	481	677	678	399	2,872
Other - Parks	Grass Reference ETo	224	72	73	109	154	154	91	652
Other - Exempt	Grass Reference ETo	0	0	0	0	0	0	0	0
Family Garden, Orchard, YD.	Grass Reference ETo	6,244	1,998	2,040	3,044	4,288	4,293	2,529	18,191
No Report .5M / A	Grass Reference ETo	398	127	130	194	273	274	161	1,159
Pond	Grass Reference ETo	11	3	3	4	6	6	3	23
								Total	89,310

Water Budget Method Eto Irrigation Season

2020 -Eto from Cal Poly Irrigation Center data

Eto (AF) = (acres)x((crop Eto inches(/12 inches/ft))

Dry	Year Type

Crop Type	Column Name for Lookup	Acres Irrigated (2020)	April	May	June	July	Aug	Sep	TOTAL
Cereals -Corn	Corn and Grain Sorghum	34	5	9	20	25	18	2	79
Cereals - Rice	Rice	97	11	51	61	76	69	20	288
Cereals - Wheat	Grain and Grain Hay	2	1	1	0	0	0	0	2
Cereals - Other	Grain and Grain Hay	30	12	8	1	0	0	0	21
Forage - Alfalfa Hay	Alfalfa Hay and Clover	155	64	79	87	96	83	64	474
Forage - Hay Other	Pasture and Misc. Grasses	826	286	443	490	571	459	373	2,622
Forage - Irrigated Pasture	Pasture and Misc. Grasses	19,727	6,839	10,571	11,688	13,628	10,965	8,894	62,585
Forage - Silage	Pasture and Misc. Grasses	19	6	10	11	13	10	8	59
Forage - Other	Pasture and Misc. Grasses	192	66	103	114	132	107	86	608
Fruits - Apple	Apple, Pear, Cherry, Plum and Prune	248	45	74	126	164	129	103	643
Fruits - Berries - All	Apple, Pear, Cherry, Plum and Prune	136	25	41	69	90	71	57	353
Fruits - Cherries	Apple, Pear, Cherry, Plum and Prune	54	10	16	27	36	28	23	140
Fruits - Citrus - All	Apple, Pear, Cherry, Plum and Prune	182	33	54	92	121	95	76	471
Fruits - Grapes - Table	Grape Vines with 80% canopy	54	11	19	25	27	21	12	115
Fruits - Grapes - Other	Grape Vines with 80% canopy	661	130	229	303	333	258	151	1,405
Fruits - Kiwi	Misc. Deciduous	21	3	4	9	13	11	9	50
Fruits - Peaches	Misc. Deciduous	118	20	24	48	76	61	51	279
Fruits - Pears	Apple, Pear, Cherry, Plum and Prune	134	24	40	68	89	70	56	347
Fruits - Plums	Apple, Pear, Cherry, Plum and Prune	160	29	48	81	106	83	67	413
Fruits - Other	Misc. Deciduous	218	36	44	89	140	114	93	515
Fruits - Persimmons	Misc. Deciduous	2	0	0	1	1	1	1	5
Fruits - Apricots	Apple, Pear, Cherry, Plum and Prune	1	0	0	0	0	0	0	2
Nursery	Flowers, Nursery and Christmas Tree	348	58	70	142	223	181	149	823
Cannabis	Cannabis	12	2	2	5	8	6	5	28
Nuts	Walnuts	203	38	55	93	150	122	96	554
Nuts - Walnuts	Walnuts	8	1	2	4	6	5	4	22
Nuts - Chestnuts	Walnuts	12	2	3	6	9	7	6	33
Nuts - Pistachios	Pistachio	1	0	0	1	1	1	1	3
Nuts - Almonds	Almonds	13	2	3	6	8	7	5	32
Other	Grass Reference ETo	731	286	415	465	548	437	363	2,514
Golf Course	Grass Reference ETo	986	386	559	628	739	589	490	3,391
Other - Parks	Grass Reference ETo	224	88	127	142	168	134	111	770
Other - Exempt	Grass Reference ETo	0	0	0	0	0	0	0	0
Family Garden, Orchard, YD.	Grass Reference ETo	6,409	2,510	3,637	4,081	4,807	3,830	3,189	22,054
No Report .5M / A	Grass Reference ETo	307	120	174	195	230	183	153	1,056
Pond	Grass Reference ETo	12	3	5	6	7	5	4	30
								Total	102,784

Water Budget Method Eto Fall/Winter

2016 -Eto rom Cal Poly Irrigation Center data

Amount of Acres Irricated during Fall/Winter proportioned on Irrigation Season Use and Fall/Winter Use

Eto (AF) = (acres)x((crop Eto inches(/12 inches/ft))

Typical	Year Type

Crop Type	Column Name for Lookup	Acres Irrigated (2016)	Oct	Nov	Dec	Jan	Feb	Mar	TOTAL
Cereals -Corn	Corn and Grain Sorghum	0.9	0.1	0.1	0.1	0.1	0.1	0.1	0.5
Cereals - Rice	Rice	6.8	0.6	0.4	0.6	0.5	0.7	0.2	3.0
Cereals - Wheat	Grain and Grain Hay	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Cereals - Other	Grain and Grain Hay	1.3	0.1	0.1	0.1	0.1	0.2	0.4	1.0
Forage - Alfalfa Hay	Alfalfa Hay and Clover	5.1	1.0	0.5	0.5	0.4	0.9	1.6	4.8
Forage - Hay Other	Pasture and Misc. Grasses	36.0	9.1	3.2	2.9	2.9	4.8	6.5	29.4
Forage - Irrigated Pasture	Pasture and Misc. Grasses	824.3	208.1	72.8	67.3	65.3	110.6	147.7	671.8
Forage - Silage	Pasture and Misc. Grasses	0.4	0.1	0.0	0.0	0.0	0.1	0.1	0.3
Forage - Other	Pasture and Misc. Grasses	2.6	0.7	0.2	0.2	0.2	0.3	0.5	2.1
Fruits - Apple	Apple, Pear, Cherry, Plum and Prune	9.8	2.6	0.6	0.8	0.8	1.0	0.6	6.3
Fruits - Berries - All	Apple, Pear, Cherry, Plum and Prune	4.8	1.3	0.3	0.4	0.4	0.5	0.3	3.1
Fruits - Cherries	Apple, Pear, Cherry, Plum and Prune	2.5	0.7	0.2	0.2	0.2	0.3	0.1	1.6
Fruits - Citrus - All	Apple, Pear, Cherry, Plum and Prune	6.6	1.7	0.4	0.5	0.5	0.7	0.4	4.3
Fruits - Grapes - Table	Grape Vines with 80% canopy	2.5	0.2	0.1	0.2	0.2	0.2	0.1	1.1
Fruits - Grapes - Other	Grape Vines with 80% canopy	27.4	2.3	1.5	2.2	2.1	2.8	1.6	12.6
Fruits - Kiwi	Misc. Deciduous	1.0	0.3	0.1	0.1	0.1	0.1	0.0	0.6
Fruits - Peaches	Misc. Deciduous	4.4	1.2	0.3	0.4	0.3	0.4	0.1	2.7
Fruits - Pears	Apple, Pear, Cherry, Plum and Prune	5.3	1.4	0.3	0.4	0.4	0.5	0.3	3.4
Fruits - Plums	Apple, Pear, Cherry, Plum and Prune	6.1	1.6	0.4	0.5	0.5	0.6	0.4	4.0
Fruits - Other	Misc. Deciduous	4.9	1.3	0.3	0.4	0.4	0.5	0.2	3.1
Fruits - Persimmons	Misc. Deciduous	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Fruits - Apricots	Apple, Pear, Cherry, Plum and Prune	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Nursery	Flowers, Nursery and Christmas Tree	16.7	4.5	1.1	1.4	1.3	1.7	0.5	10.5
Cannabis	Cannabis	na	--	--	--	--	--	--	0.0
Nuts	Walnuts	7.5	2.1	0.7	0.6	0.6	0.8	0.4	5.0
Nuts - Walnuts	Walnuts	0.7	0.2	0.1	0.1	0.1	0.1	0.0	0.4
Nuts - Chestnuts	Walnuts	0.7	0.2	0.1	0.1	0.1	0.1	0.0	0.4
Nuts - Pistachios	Pistachio	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Nuts - Almonds	Almonds	0.6	0.2	0.1	0.0	0.0	0.1	0.0	0.4
Other	Grass Reference ETo	32.9	9.9	3.8	2.9	2.4	5.4	11.0	35.3
Golf Course	Grass Reference ETo	43.0	12.9	4.9	3.8	3.2	7.0	14.4	46.1
Other - Parks	Grass Reference ETo	6.7	2.0	0.8	0.6	0.5	1.1	2.2	7.1
Other - Exempt	Grass Reference ETo	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Family Garden, Orchard, YD.	Grass Reference ETo	263.3	78.8	30.3	23.0	19.5	42.8	88.0	282.4
No Report .5M / A	Grass Reference ETo	13.3	4.0	1.5	1.2	1.0	2.2	4.4	14.2
Pond	Grass Reference ETo	0.5	0.1	0.0	0.0	0.0	0.1	0.1	0.4
								Total	1,158

Water Budget Method Eto Fall/Winter

2017 -Eto rom Cal Poly Irrigation Center data

Amount of Acres Irricated during Fall/Winter proportioned on Irrigation Season Use and Fall/Winter Use

Eto (AF) = (acres)x((crop Eto inches(/12 inches/ft))

Wet	Year Type

Crop Type	Column Name for Lookup	Acres Irrigated (2017)	Oct	Nov	Dec	Jan	Feb	Mar	TOTAL
Cereals -Corn	Corn and Grain Sorghum	1.2	0.0	0.1	0.1	0.1	0.1	0.2	0.6
Cereals - Rice	Rice	5.6	0.0	0.0	0.0	0.4	0.6	0.2	1.2
Cereals - Wheat	Grain and Grain Hay	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Cereals - Other	Grain and Grain Hay	1.0	0.0	0.1	0.1	0.1	0.1	0.3	0.7
Forage - Alfalfa Hay	Alfalfa Hay and Clover	4.8	0.7	0.5	0.4	0.4	0.4	1.1	3.6
Forage - Hay Other	Pasture and Misc. Grasses	28.9	6.8	3.1	2.2	2.4	2.6	6.2	23.3
Forage - Irrigated Pasture	Pasture and Misc. Grasses	691.3	162.4	74.9	53.6	56.5	62.2	147.5	557.1
Forage - Silage	Pasture and Misc. Grasses	0.3	0.1	0.0	0.0	0.0	0.0	0.1	0.2
Forage - Other	Pasture and Misc. Grasses	6.8	1.6	0.7	0.5	0.6	0.6	1.4	5.4
Fruits - Apple	Apple, Pear, Cherry, Plum and Prune	8.2	2.0	0.9	0.6	0.7	0.7	1.3	6.1
Fruits - Berries - All	Apple, Pear, Cherry, Plum and Prune	4.5	1.1	0.5	0.3	0.4	0.4	0.7	3.3
Fruits - Cherries	Apple, Pear, Cherry, Plum and Prune	2.1	0.5	0.2	0.2	0.2	0.2	0.3	1.6
Fruits - Citrus - All	Apple, Pear, Cherry, Plum and Prune	6.1	1.5	0.6	0.5	0.5	0.5	1.0	4.6
Fruits - Grapes - Table	Grape Vines with 80% canopy	1.9	0.1	0.2	0.1	0.2	0.2	0.3	1.1
Fruits - Grapes - Other	Grape Vines with 80% canopy	22.6	1.1	2.2	1.7	1.8	2.0	3.5	12.4
Fruits - Kiwi	Misc. Deciduous	0.9	0.2	0.1	0.1	0.1	0.1	0.1	0.6
Fruits - Peaches	Misc. Deciduous	3.7	0.9	0.4	0.3	0.3	0.3	0.5	2.7
Fruits - Pears	Apple, Pear, Cherry, Plum and Prune	5.0	1.2	0.5	0.4	0.4	0.4	0.8	3.7
Fruits - Plums	Apple, Pear, Cherry, Plum and Prune	5.1	1.2	0.5	0.4	0.4	0.4	0.8	3.8
Fruits - Other	Misc. Deciduous	4.1	1.0	0.4	0.3	0.3	0.4	0.6	3.0
Fruits - Persimmons	Misc. Deciduous	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Fruits - Apricots	Apple, Pear, Cherry, Plum and Prune	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Nursery	Flowers, Nursery and Christmas Tree	13.3	3.2	1.4	1.0	1.1	1.2	2.0	9.8
Cannabis	Cannabis	0.5	0.1	0.0	0.0	0.0	0.0	0.1	0.3
Nuts	Walnuts	6.9	1.8	0.7	0.5	0.6	0.6	1.0	5.2
Nuts - Walnuts	Walnuts	0.5	0.1	0.1	0.0	0.0	0.0	0.1	0.4
Nuts - Chestnuts	Walnuts	0.5	0.1	0.1	0.0	0.0	0.0	0.1	0.4
Nuts - Pistachios	Pistachio	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Nuts - Almonds	Almonds	0.5	0.1	0.1	0.0	0.0	0.0	0.1	0.4
Other	Grass Reference ETo	26.6	7.6	2.7	2.2	2.2	2.2	6.1	23.0
Golf Course	Grass Reference ETo	35.2	10.0	3.6	3.0	3.0	2.9	8.0	30.5
Other - Parks	Grass Reference ETo	5.4	1.5	0.5	0.5	0.5	0.4	1.2	4.7
Other - Exempt	Grass Reference ETo	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Family Garden, Orchard, YD.	Grass Reference ETo	220.0	62.5	22.2	18.5	18.5	18.2	50.2	190.2
No Report .5M / A	Grass Reference ETo	12.9	3.7	1.3	1.1	1.1	1.1	3.0	11.2
Pond	Grass Reference ETo	0.4	0.1	0.0	0.0	0.0	0.0	0.1	0.3
								Total	912

Water Budget Method Eto Fall/Winter

2018 -Eto rom Cal Poly Irrigation Center data

Amount of Acres Irricated during Fall/Winter proportioned on Irrigation Season Use and Fall/Winter Use

Eto (AF) = (acres)x((crop Eto inches(/12 inches/ft))

Typical	Year Type

Crop Type	Column Name for Lookup	Acres Irrigated (2018)	Oct	Nov	Dec	Jan	Feb	Mar	TOTAL
Cereals -Corn	Corn and Grain Sorghum	1.2	0.1	0.1	0.1	0.1	0.1	0.1	0.6
Cereals - Rice	Rice	5.7	0.5	0.3	0.5	0.5	0.6	0.2	2.5
Cereals - Wheat	Grain and Grain Hay	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Cereals - Other	Grain and Grain Hay	1.1	0.1	0.1	0.1	0.1	0.2	0.4	0.9
Forage - Alfalfa Hay	Alfalfa Hay and Clover	5.0	1.0	0.5	0.5	0.4	0.8	1.5	4.7
Forage - Hay Other	Pasture and Misc. Grasses	29.7	7.5	2.6	2.4	2.4	4.0	5.3	24.2
Forage - Irrigated Pasture	Pasture and Misc. Grasses	720.4	181.9	63.6	58.8	57.0	96.7	129.1	587.2
Forage - Silage	Pasture and Misc. Grasses	0.3	0.1	0.0	0.0	0.0	0.0	0.1	0.3
Forage - Other	Pasture and Misc. Grasses	7.1	1.8	0.6	0.6	0.6	0.9	1.3	5.8
Fruits - Apple	Apple, Pear, Cherry, Plum and Prune	8.5	2.2	0.6	0.7	0.7	0.9	0.5	5.5
Fruits - Berries - All	Apple, Pear, Cherry, Plum and Prune	4.7	1.2	0.3	0.4	0.4	0.5	0.3	3.0
Fruits - Cherries	Apple, Pear, Cherry, Plum and Prune	2.0	0.5	0.1	0.2	0.2	0.2	0.1	1.3
Fruits - Citrus - All	Apple, Pear, Cherry, Plum and Prune	6.0	1.6	0.4	0.5	0.5	0.6	0.3	3.9
Fruits - Grapes - Table	Grape Vines with 80% canopy	1.9	0.2	0.1	0.2	0.1	0.2	0.1	0.9
Fruits - Grapes - Other	Grape Vines with 80% canopy	23.8	2.0	1.3	1.9	1.9	2.4	1.4	10.9
Fruits - Kiwi	Misc. Deciduous	0.9	0.2	0.1	0.1	0.1	0.1	0.0	0.6
Fruits - Peaches	Misc. Deciduous	3.9	1.1	0.2	0.3	0.3	0.4	0.1	2.4
Fruits - Pears	Apple, Pear, Cherry, Plum and Prune	4.9	1.3	0.3	0.4	0.4	0.5	0.3	3.1
Fruits - Plums	Apple, Pear, Cherry, Plum and Prune	5.3	1.4	0.4	0.4	0.4	0.5	0.3	3.5
Fruits - Other	Misc. Deciduous	8.5	2.3	0.5	0.7	0.7	0.9	0.3	5.3
Fruits - Persimmons	Misc. Deciduous	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Fruits - Apricots	Apple, Pear, Cherry, Plum and Prune	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Nursery	Flowers, Nursery and Christmas Tree	14.0	3.8	0.9	1.1	1.1	1.4	0.4	8.8
Cannabis	Cannabis	0.5	0.1	0.0	0.0	0.0	0.0	0.0	0.3
Nuts	Walnuts	7.2	2.0	0.6	0.6	0.6	0.7	0.3	4.8
Nuts - Walnuts	Walnuts	0.5	0.1	0.0	0.0	0.0	0.1	0.0	0.3
Nuts - Chestnuts	Walnuts	0.4	0.1	0.0	0.0	0.0	0.0	0.0	0.3
Nuts - Pistachios	Pistachio	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Nuts - Almonds	Almonds	0.5	0.1	0.0	0.0	0.0	0.0	0.0	0.3
Other	Grass Reference ETo	26.8	8.0	3.1	2.3	2.0	4.4	9.0	28.7
Golf Course	Grass Reference ETo	36.5	10.9	4.2	3.2	2.7	5.9	12.2	39.2
Other - Parks	Grass Reference ETo	8.2	2.5	0.9	0.7	0.6	1.3	2.7	8.8
Other - Exempt	Grass Reference ETo	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Family Garden, Orchard, YD.	Grass Reference ETo	229.1	68.5	26.3	20.0	17.0	37.2	76.5	245.7
No Report .5M / A	Grass Reference ETo	16.5	4.9	1.9	1.4	1.2	2.7	5.5	17.7
Pond	Grass Reference ETo	0.4	0.1	0.0	0.0	0.0	0.0	0.1	0.3
								Total	1,022

Water Budget Method Eto Fall/Winter

2019 -Eto rom Cal Poly Irrigation Center data

Amount of Acres Irricated during Fall/Winter proportioned on Irrigation Season Use and Fall/Winter Use

Eto (AF) = (acres)x((crop Eto inches(/12 inches/ft))

Wet	Year Type

Crop Type	Column Name for Lookup	Acres Irrigated (2019)	Oct	Nov	Dec	Jan	Feb	Mar	TOTAL
Cereals -Corn	Corn and Grain Sorghum	0.9	0.0	0.1	0.1	0.1	0.1	0.2	0.5
Cereals - Rice	Rice	2.7	0.0	0.0	0.0	0.2	0.3	0.1	0.6
Cereals - Wheat	Grain and Grain Hay	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cereals - Other	Grain and Grain Hay	0.8	0.0	0.1	0.1	0.1	0.1	0.2	0.5
Forage - Alfalfa Hay	Alfalfa Hay and Clover	4.4	0.7	0.5	0.4	0.4	0.4	1.0	3.3
Forage - Hay Other	Pasture and Misc. Grasses	24.2	5.7	2.6	1.9	2.0	2.2	5.2	19.5
Forage - Irrigated Pasture	Pasture and Misc. Grasses	559.7	131.5	60.6	43.4	45.7	50.4	119.4	451.1
Forage - Silage	Pasture and Misc. Grasses	0.2	0.1	0.0	0.0	0.0	0.0	0.1	0.2
Forage - Other	Pasture and Misc. Grasses	5.4	1.3	0.6	0.4	0.4	0.5	1.2	4.3
Fruits - Apple	Apple, Pear, Cherry, Plum and Prune	6.8	1.6	0.7	0.5	0.6	0.6	1.1	5.1
Fruits - Berries - All	Apple, Pear, Cherry, Plum and Prune	3.9	0.9	0.4	0.3	0.3	0.3	0.6	2.9
Fruits - Cherries	Apple, Pear, Cherry, Plum and Prune	1.6	0.4	0.2	0.1	0.1	0.1	0.2	1.2
Fruits - Citrus - All	Apple, Pear, Cherry, Plum and Prune	4.7	1.1	0.5	0.4	0.4	0.4	0.7	3.5
Fruits - Grapes - Table	Grape Vines with 80% canopy	1.5	0.1	0.1	0.1	0.1	0.1	0.2	0.8
Fruits - Grapes - Other	Grape Vines with 80% canopy	19.0	0.9	1.8	1.5	1.6	1.7	3.0	10.4
Fruits - Kiwi	Misc. Deciduous	0.6	0.1	0.1	0.0	0.0	0.1	0.1	0.4
Fruits - Peaches	Misc. Deciduous	3.2	0.8	0.3	0.2	0.3	0.3	0.5	2.3
Fruits - Pears	Apple, Pear, Cherry, Plum and Prune	3.6	0.9	0.4	0.3	0.3	0.3	0.6	2.7
Fruits - Plums	Apple, Pear, Cherry, Plum and Prune	4.2	1.0	0.4	0.3	0.3	0.4	0.7	3.1
Fruits - Other	Misc. Deciduous	5.9	1.4	0.6	0.5	0.5	0.5	0.9	4.4
Fruits - Persimmons	Misc. Deciduous	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Fruits - Apricots	Apple, Pear, Cherry, Plum and Prune	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Nursery	Flowers, Nursery and Christmas Tree	10.7	2.6	1.1	0.8	0.9	0.9	1.6	7.9
Cannabis	Cannabis	0.4	0.1	0.0	0.0	0.0	0.0	0.1	0.3
Nuts	Walnuts	5.6	1.4	0.6	0.4	0.5	0.5	0.8	4.2
Nuts - Walnuts	Walnuts	0.3	0.1	0.0	0.0	0.0	0.0	0.0	0.3
Nuts - Chestnuts	Walnuts	0.3	0.1	0.0	0.0	0.0	0.0	0.1	0.3
Nuts - Pistachios	Pistachio	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Nuts - Almonds	Almonds	0.4	0.1	0.0	0.0	0.0	0.0	0.1	0.3
Other	Grass Reference ETo	20.7	5.9	2.1	1.7	1.7	1.7	4.7	17.9
Golf Course	Grass Reference ETo	28.0	8.0	2.8	2.4	2.4	2.3	6.4	24.2
Other - Parks	Grass Reference ETo	6.4	1.8	0.6	0.5	0.5	0.5	1.5	5.5
Other - Exempt	Grass Reference ETo	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Family Garden, Orchard, YD.	Grass Reference ETo	177.4	50.4	17.9	14.9	14.9	14.6	40.5	153.3
No Report .5M / A	Grass Reference ETo	11.3	3.2	1.1	1.0	1.0	0.9	2.6	9.8
Pond	Grass Reference ETo	0.3	0.1	0.0	0.0	0.0	0.0	0.1	0.2
								Total	741

Water Budget Method Eto Fall/Winter

2020 -Eto rom Cal Poly Irrigation Center data

Amount of Acres Irricated during Fall/Winter proportioned on Irrigation Season Use and Fall/Winter Use

Eto (AF) = (acres)x(crop Eto inches(/12 inches/ft))

Dry	Year Type

Crop Type	Column Name for Lookup	Acres Irrigated (2020)	Oct	Nov	Dec	Jan	Feb	Mar	TOTAL
Cereals -Corn	Corn and Grain Sorghum	1.6	0.1	0.2	0.1	0.1	0.2	0.2	0.9
Cereals - Rice	Rice	4.6	0.0	0.0	0.0	0.4	0.5	0.1	1.0
Cereals - Wheat	Grain and Grain Hay	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Cereals - Other	Grain and Grain Hay	1.4	0.1	0.2	0.1	0.1	0.2	0.4	1.0
Forage - Alfalfa Hay	Alfalfa Hay and Clover	7.4	1.3	1.2	0.8	0.8	1.0	2.0	7.0
Forage - Hay Other	Pasture and Misc. Grasses	39.4	11.0	5.9	2.9	2.1	5.2	8.9	36.0
Forage - Irrigated Pasture	Pasture and Misc. Grasses	941.3	262.8	142.0	69.0	49.4	124.7	211.8	859.8
Forage - Silage	Pasture and Misc. Grasses	0.9	0.2	0.1	0.1	0.0	0.1	0.2	0.8
Forage - Other	Pasture and Misc. Grasses	9.1	2.6	1.4	0.7	0.5	1.2	2.1	8.4
Fruits - Apple	Apple, Pear, Cherry, Plum and Prune	11.8	3.4	1.6	0.9	0.6	1.6	1.9	10.0
Fruits - Berries - All	Apple, Pear, Cherry, Plum and Prune	6.5	1.9	0.9	0.5	0.3	0.9	1.1	5.5
Fruits - Cherries	Apple, Pear, Cherry, Plum and Prune	2.6	0.7	0.4	0.2	0.1	0.3	0.4	2.2
Fruits - Citrus - All	Apple, Pear, Cherry, Plum and Prune	8.7	2.5	1.2	0.6	0.5	1.1	1.4	7.3
Fruits - Grapes - Table	Grape Vines with 80% canopy	2.6	0.1	0.3	0.2	0.1	0.3	0.4	1.5
Fruits - Grapes - Other	Grape Vines with 80% canopy	31.5	1.6	3.9	2.3	1.7	4.2	5.1	18.8
Fruits - Kiwi	Misc. Deciduous	1.0	0.3	0.1	0.1	0.1	0.1	0.1	0.8
Fruits - Peaches	Misc. Deciduous	5.6	1.6	0.8	0.4	0.3	0.7	0.8	4.7
Fruits - Pears	Apple, Pear, Cherry, Plum and Prune	6.4	1.8	0.9	0.5	0.3	0.8	1.0	5.4
Fruits - Plums	Apple, Pear, Cherry, Plum and Prune	7.6	2.2	1.0	0.6	0.4	1.0	1.2	6.4
Fruits - Other	Misc. Deciduous	10.4	3.0	1.5	0.8	0.5	1.4	1.5	8.6
Fruits - Persimmons	Misc. Deciduous	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Fruits - Apricots	Apple, Pear, Cherry, Plum and Prune	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Nursery	Flowers, Nursery and Christmas Tree	16.6	4.8	2.3	1.2	0.9	2.2	2.4	13.8
Cannabis	Cannabis	0.6	0.2	0.1	0.0	0.0	0.1	0.1	0.5
Nuts	Walnuts	9.7	2.9	1.5	0.7	0.5	1.3	1.5	8.4
Nuts - Walnuts	Walnuts	0.4	0.1	0.1	0.0	0.0	0.0	0.1	0.3
Nuts - Chestnuts	Walnuts	0.6	0.2	0.1	0.0	0.0	0.1	0.1	0.5
Nuts - Pistachios	Pistachio	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Nuts - Almonds	Almonds	0.6	0.2	0.1	0.0	0.0	0.1	0.1	0.5
Other	Grass Reference ETo	34.9	11.9	5.2	3.7	3.5	4.2	9.0	37.6
Golf Course	Grass Reference ETo	47.0	16.1	7.1	5.0	4.7	5.7	12.1	50.7
Other - Parks	Grass Reference ETo	10.7	3.6	1.6	1.1	1.1	1.3	2.7	11.5
Other - Exempt	Grass Reference ETo	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Family Garden, Orchard, YD.	Grass Reference ETo	305.8	104.5	45.9	32.6	30.8	37.2	78.8	329.8
No Report .5M / A	Grass Reference ETo	14.6	5.0	2.2	1.6	1.5	1.8	3.8	15.8
Pond	Grass Reference ETo	0.6	0.1	0.1	0.0	0.0	0.1	0.1	0.5
								Total	1,456

ETc Table for Irrigation District Water Balances

Zone 13 Monthly Evapotranspiration

Surface Irrigation Wet Year

IRRIGATION TRAINING AND RESEARCH CENTER, California Polytechnic State University, San Luis Obispo, http://www.itrc.org/etdata/index.html

Table includes adjustments for bare spots and reduced vigor

	Wet Year January inches	February inches	March inches	April inches	May inches	June inches	July inches	August inches	Septembe inches	October inches	November inches	December inches	Annual inches
Precipitation	8.8	9.21	3.72	2.76	3.33	1.22	0.08	0	0.77	0.63	3.94	1.2	35.65
Grass Reference ETo	1.01	0.99	2.74	3.84	3.92	5.85	8.24	8.25	4.86	3.41	1.21	1.01	45.33
Apple, Pear, Cherry, Plum and Prune	0.98	1.05	1.88	2.53	3.6	5.37	7.23	7.14	4.48	2.89	1.25	0.92	39.33
Apples, Plums, Cherries etc w/covercrop	1.14	1.06	2.97	3.98	4.17	6.15	8.89	8.95	5.16	3.38	1.3	1.1	48.24
Almonds	0.98	1.05	1.88	2.47	3.49	5.02	6.95	6.84	4.09	2.91	1.31	0.92	37.91
Almonds w/covercrop	1.13	1.06	2.82	3.61	4.06	5.69	8.13	8.1	4.86	3.34	1.33	1.08	45.22
Immature Almonds	0.98	1.05	1.84	2.29	3.1	3.83	4.96	4.83	3.22	2.08	1.26	0.92	30.37
Walnuts	0.98	1.04	1.77	2.53	3.49	5.36	7.78	8.1	4.86	3.06	1.3	0.92	41.19
Pistachio	0.98	1.05	1.77	2.53	3.3	4.95	7.78	8.01	4.93	3.04	1.31	0.92	40.58
Pistachio w/ covercrop	1.13	1.06	2.82	3.57	3.96	5.9	8.67	8.91	5.31	3.61	1.32	1.08	47.34
Immature Pistachio	0.98	1.05	1.77	2.25	2.96	3.42	5.36	5.58	3.47	2.25	1.25	0.92	31.26
Misc. Deciduous	0.98	1.05	1.77	2.39	3.23	4.69	7.08	6.96	4.52	2.89	1.26	0.92	37.73
Grain and Grain Hay	1.04	1.08	2.94	4.09	3.45	1.33	0.08	0	0.56	0.5	1.17	0.98	17.23
Rice	0.95	1.21	0.37	1.36	6.3	7.55	9.43	8.6	2.45	1	0.67	0.98	40.87
Corn and Grain Sorghum	0.98	1.07	1.98	2.42	3.27	5.65	8.19	7.18	1.24	0.5	1.16	0.93	34.58
Misc. field crops	0.98	1.07	1.98	2.42	3.28	5.45	7.44	3.18	0.57	0.5	1.16	0.93	28.95
Alfalfa Hay and Clover	1.11	1.08	2.76	4.25	4.33	6.2	6.9	6.76	4.17	1.77	1.28	1.09	41.72
Pasture and Misc. Grasses	0.98	1.08	2.56	3.68	4.07	5.71	7.57	7.59	4.56	2.82	1.3	0.93	42.84
Small Vegetables	1.03	1.08	2.65	2.02	2.55	1.26	0.08	1.04	1.23	1.25	1.26	1.06	16.5
Tomatoes and Peppers	0.98	1.07	2.29	2.39	3.52	5.91	7.14	0.84	0.57	0.5	1.16	0.93	27.29
Strawberries	0.98	1.07	1.98	2.42	3.28	5.45	7.44	3.18	0.57	0.5	1.16	0.93	28.95
Flowers, Nursery and Christmas Tree	0.98	1.05	1.77	2.39	3.23	4.69	7.08	6.96	4.52	2.89	1.26	0.92	37.73
Misc Subtropical	0.98	1.05	1.77	2.39	3.23	4.69	7.08	6.96	4.52	2.89	1.26	0.92	37.73
Grape Vines with 80% canopy	0.98	1.05	1.88	2.69	3.71	4.91	5.74	5.02	2.94	0.57	1.16	0.92	31.57
Grape Vines with cover crop (80% canopy)	1.11	1.06	2.7	3.49	4.03	5.2	6.79	6.08	3.11	1.93	1.23	1.07	37.82
Immature Grapes Vines with 50% canopy	0.98	1.06	1.84	2.41	3.25	3.95	4.33	3.67	2.32	0.55	1.16	0.93	26.43
Idle	0.98	1.08	1.75	1.99	2.56	1.26	0.08	0	0.57	0.5	1.16	0.93	12.85
Cannabis	0.98	1.05	1.77	2.39	3.23	4.69	7.08	6.96	4.52	2.89	1.26	0.92	37.73

ETc Table for Irrigation District Water Balances
Zone 13 Monthly Evapotranspiration
Surface Irrigation Dry Year
IRRIGATION TRAINING AND RESEARCH CENTER, California Polytechnic State University, San Luis Obispo, http://www.itrc.org/etdata/index.html
Table includes adjustments for bare spots and reduced vigor

	Dry Year January inches	February inches	March inches	April inches	May inches	June inches	July inches	August inches	Septembe inches	October inches	November inches	December inches	Annual inches
Precipitation	4.67	7.74	1.95	1.59	0.75	0.35	0	0.19	0	1.64	2.86	0.45	22.19
Grass Reference ETo	1.21	1.46	3.09	4.7	6.81	7.64	9	7.17	5.97	4.1	1.8	1.28	54.24
Apple, Pear, Cherry, Plum and Prune	0.63	1.58	1.96	2.19	3.59	6.09	7.95	6.24	5	3.46	1.64	0.88	41.21
Apples, Plums, Cherries etc w/covercrop	1.26	1.61	3.29	4.39	6.35	8.13	9.74	7.71	6.38	3.89	2.02	1.4	56.17
Almonds	0.63	1.58	1.96	2.14	3.21	5.51	7.43	6.03	4.98	3.39	1.88	0.88	39.62
Almonds w/covercrop	1.15	1.61	3.03	3.77	5.45	6.92	8.87	7.11	5.84	3.75	1.96	1.34	50.82
Immature Almonds	0.63	1.58	1.88	1.9	2.31	4.2	5.22	4.32	3.69	2.47	1.75	0.88	30.82
Walnuts	0.63	1.58	1.87	2.25	3.23	5.52	8.87	7.19	5.7	3.54	1.89	0.88	43.16
Pistachio	0.63	1.58	1.72	2.18	2.61	5.07	8.5	7.19	5.81	3.63	1.9	0.88	41.69
Pistachio w/ covercrop	1.15	1.61	3.03	3.82	5.09	6.86	9.46	7.78	6.5	4.25	2.03	1.36	52.94
Immature Pistachio	0.63	1.58	1.72	1.83	1.66	3.62	5.65	4.85	3.89	2.64	1.73	0.88	30.68
Misc. Deciduous	0.63	1.58	1.72	2	2.4	4.89	7.7	6.26	5.15	3.45	1.68	0.88	38.34
Grain and Grain Hay	0.78	1.61	3.32	4.86	3.31	0.34	0	0.17	0	0.63	1.48	0.97	17.47
Rice	0.95	1.21	0.37	1.36	6.3	7.55	9.43	8.6	2.45	1	0.67	0.98	40.87
Corn and Grain Sorghum	0.63	1.58	1.76	1.9	3.09	7.07	8.94	6.33	0.84	0.62	1.48	0.88	35.12
Misc. field crops	0.63	1.58	1.76	1.9	2.97	6.79	8.08	2.62	0	0.63	1.48	0.88	29.32
Alfalfa Hay and Clover	1.23	1.61	3.23	4.95	6.13	6.74	7.43	6.39	4.95	2.11	1.87	1.35	47.99
Pasture and Misc. Grasses	0.63	1.59	2.7	4.16	6.43	7.11	8.29	6.67	5.41	3.35	1.81	0.88	49.03
Small Vegetables	1.01	1.6	3	1.65	0.64	0.33	0	1.06	1.34	1.55	1.82	1.29	15.28
Tomatoes and Peppers	0.63	1.58	1.97	2	4.16	7.53	7.55	0.67	0	0.63	1.48	0.88	29.07
Strawberries	0.63	1.58	1.76	1.9	2.97	6.79	8.08	2.62	0	0.63	1.48	0.88	29.32
Flowers, Nursery and Christmas Tree	0.63	1.58	1.72	2	2.4	4.89	7.7	6.26	5.15	3.45	1.68	0.88	38.34
Misc Subtropical	0.63	1.58	1.72	2	2.4	4.89	7.7	6.26	5.15	3.45	1.68	0.88	38.34
Grape Vines with 80% canopy	0.63	1.58	1.96	2.36	4.16	5.51	6.05	4.69	2.74	0.62	1.49	0.88	32.67
Grape Vines with cover crop (80% canopy)	1.05	1.61	2.82	3.57	5	6.3	7.08	5.59	3.34	1.85	1.75	1.24	41.19
Immature Grapes Vines with 50% canopy	0.63	1.58	1.88	2.02	2.96	4.36	4.56	3.52	1.9	0.67	1.49	0.88	26.44
Cannabis	0.63	1.58	1.72	2	2.4	4.89	7.7	6.26	5.15	3.45	1.68	0.88	38.34
Idle	0.63	1.59	1.71	1.47	0.64	0.33	0	0.17	0	0.62	1.48	0.88	9.51

ETc Table for Irrigation District Water Balances

Zone 13 Monthly Evapotranspiration

Surface Irrigation Typical Year

IRRIGATION TRAINING AND RESEARCH CENTER, California Polytechnic State University, San Luis Obispo, http://www.itrc.org/etdata/index.html

Table includes adjustments for bare spots and reduced vigor

	Typical Year												
	January	February	March	April	May	June	July	August	Septembe	October	November	December	Annual
	inches	inches	inches	inches	inches	inches	inches	inches	inches	inches	inches	inches	inches
Precipitation	11.46	0.79	0.37	1.1	0.33	0.43	0.12	0.28	0.08	1.56	2.22	2.46	21.2
Grass Reference ETo	0.89	1.95	4.01	4.8	6.98	6.74	8.27	7.59	5.79	3.59	1.38	1.05	53.03
Apple, Pear, Cherry, Plum and Prune	0.93	1.22	0.7	1.75	3.23	5.44	7.26	6.73	4.96	3.14	0.79	0.98	37.14
Apples, Plums, Cherries etc w/covercrop	0.97	2.18	3.35	3.9	6.38	7.05	8.87	8.25	6.17	3.57	1.27	1.17	53.11
Almonds	0.93	1.22	0.7	1.7	2.91	4.9	6.74	6.53	4.88	3.21	1.14	0.98	35.84
Almonds w/covercrop	0.97	2.06	2.65	3.43	5.31	6.32	7.97	7.51	5.58	3.56	1.27	1.16	47.81
Immature Almonds	0.94	1.22	0.59	1.45	2.29	3.58	4.92	4.6	3.5	2.39	0.95	0.98	27.41
Walnuts	0.93	1.22	0.57	1.85	2.84	5.05	8.14	7.6	5.45	3.31	1.07	0.99	39.03
Pistachio	0.93	1.22	0.37	1.71	2.23	4.54	7.78	7.6	5.77	3.25	1.19	0.98	37.59
Pistachio w/ covercrop	0.97	2.06	2.64	3.55	4.96	6.22	8.6	8.27	6.23	3.83	1.3	1.16	49.78
Immature Pistachio	0.94	1.22	0.37	1.35	1.33	3.32	5.15	5.25	3.97	2.48	0.95	0.98	27.3
Misc. Deciduous	0.93	1.22	0.37	1.53	2.02	4.36	7.03	6.75	4.97	3.26	0.76	0.98	34.19
Grain and Grain Hay	0.96	2.04	4.07	4.9	3.66	0.42	0.1	0.26	0.07	1	0.67	1.03	19.19
Rice	0.95	1.21	0.37	1.36	6.3	7.55	9.43	8.6	2.45	1	0.67	0.98	40.87
Cotton	0.95	1.21	0.96	1.26	1.62	5.27	8.16	7.08	1.26	1.01	0.67	0.98	30.42
Corn and Grain Sorghum	0.95	1.21	1.12	2.03	2.5	6.3	8.22	6.78	0.85	1	0.67	0.98	32.62
Misc. field crops	0.95	1.21	1.12	2.04	2.41	5.97	7.45	2.91	0.07	1	0.67	0.98	26.78
Alfalfa Hay and Clover	0.98	2.04	3.68	4.03	5.87	6.25	6.89	6.16	4.81	2.38	1.1	1.15	45.33
Pasture and Misc. Grasses	0.95	1.61	2.15	3.91	6.45	6.26	7.64	7.02	5.27	3.03	1.06	0.98	46.32
Small Vegetables	0.97	1.66	3.44	2.08	0.32	0.4	0.1	1.31	1.46	1.89	1.14	1.12	15.9
Tomatoes and Peppers	0.95	1.21	1.06	1.48	3.37	6.66	7.08	1.03	0.07	1	0.67	0.98	25.55
Strawberries	0.95	1.21	1.12	2.04	2.41	5.97	7.45	2.91	0.07	1	0.67	0.98	26.78
Flowers, Nursery and Christmas Tree	0.93	1.22	0.37	1.53	2.02	4.36	7.03	6.75	4.97	3.26	0.76	0.98	34.19
Misc Subtropical	0.93	1.22	0.37	1.53	2.02	4.36	7.03	6.75	4.97	3.26	0.76	0.98	34.19
Grape Vines with 80% canopy	0.94	1.22	0.7	1.87	3.7	4.95	5.57	5.22	2.57	1	0.66	0.98	29.38
Grape Vines with cover crop (80% canopy)	0.97	1.95	2.26	2.94	5.19	5.46	6.44	6.08	3.29	2.49	0.96	1.15	39.17
Immature Grapes Vines with 50% canopy	0.94	1.22	0.59	1.54	2.81	3.84	4.37	3.61	2.01	1	0.66	0.98	23.57
Idle	0.95	1.2	0.37	0.98	0.32	0.4	0.1	0.26	0.07	0.99	0.68	0.98	7.31
Cannabis	0.93	1.22	0.37	1.53	2.02	4.36	7.03	6.75	4.97	3.26	0.76	0.98	34.19

Growing Season Assumed to be April through September

Uses fao.org effective precipitation methodology

Station reference: https://www.cnrfc.noaa.gov/monthly_precip_2016.php

Effective Precip (AF) = (monthly precip/12 in./ft) x (effective %) x (acres)

WY 2016 Precipitation Data (in)

ID	Location	2015 OCT	NOV	DEC	2016 JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
AUBC1	AUBURN	0	3.56	6.44	5.19	1.4	7.55	1.21	1.28	0	0	0	0
COFC1	COLFAX	0.67	4.72	9.31	11.5	1.68	13.69	2.39	0.98	0	0	0	0.02
GRAC1	GRASS VALLEY NO. 2	0.7	5.73	12.3	15.05	1.87	16.62	2.17	1.21	0	0	0	0
NVDC1	NEVADA CITY	0.99	5.1	13.84	17.44	1.94	19.22	2.5	1.72	0	0	0	0
Growing Season Average Precip		0.59	4.78	10.47	12.30	1.72	14.27	2.07	1.30	0.00	0.00	0.00	0.01
Effective Precip % Based on FAO Table		29%	58%	69%	65%	38%	56%	41%	35%	--	--	--	0%
Effective Precip (in)		0.17	2.78	7.19	7.95	0.66	8.05	0.85	0.45	0.00	0.00	0.00	0.00
Irrigated Acres (Crop Reports)		1,338						30,629					
Water Year Effective Precip (AF)		2,988						3,324					

WY 2017 Precipitation Data (in)

ID	Location	2016 OCT	NOV	DEC	2017 JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
AUBC1	AUBURN	3.13	3.3	3.42	10	8.35	3.66	4.09	0.58	0.2	0	0	0
COFC1	COLFAX	9.93	6.39	10.81	19.05	15.76	5.83	8.37	0.36	0.83	0	0.01	0
GRAC1	GRASS VALLEY NO. 2	10.29	7.19	13.35	25.93	22.66	6.65	8.86	0.35	0.5	0	0.01	0.14
NVDC1	NEVADA CITY	12.14	7.53	9.97	27.6	26.65	7.38	11.4	0.11	0.75	0	0.01	0.23
Growing Season Average Precip		8.87	6.10	9.39	20.65	18.36	5.88	8.18	0.35	0.57	0.00	0.01	0.09
Effective Precip % Based on FAO Table		69%	64%	69%	1%	26%	63%	69%	0%	28%	--	0%	0%
Effective Precip (in)		6.14	3.89	6.51	0.28	4.79	3.70	5.61	0.00	0.16	0.00	0.00	0.00
Irrigated Acres (Crop Reports)		1,127						31,470					
Water Year Effective Precip (AF)		2,376						15,134					

WY 2018 Precipitation Data (in)

ID	Location	2017 OCT	NOV	DEC	2018 JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
AUBC1	AUBURN	0.78	5.82	0.52	4.62	1.13	7.59	0.89	0.15	0	0	0	0
COFC1	COLFAX	0.77	10.49	0.79	8.03	0.95	16.75	5.23	0.15	0	0	0	0
GRAC1	GRASS VALLEY NO. 2	1.04	12.76	1.06	9.72	0.75	15.93	6.27	0.43	0	0	0	0
NVDC1	NEVADA CITY	0.93	14.23	0.88	10.01	0.28	18.28	4.82	0.48	0	0	0	0
Growing Season Average Precip		0.88	10.83	0.81	8.10	0.78	14.64	4.30	0.30	0.00	0.00	0.00	0.00
Effective Precip % Based on FAO Table		31%	68%	31%	68%	30%	54%	56%	0%	--	--	--	--
Effective Precip (in)		0.27	7.38	0.25	5.54	0.24	7.96	2.40	0.00	0.00	0.00	0.00	0.00
Irrigated Acres (Crop Reports)		1,181						31,835					
Water Year Effective Precip (AF)		2,130						6,366					

WY 2019 Precipitation Data (in)

ID	Location	2018 OCT	NOV	DEC	2019 JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
AUBC1	AUBURN	1.19	5.56	1.7	4.92	9.8	3.78	0.98	1.6	0	0	0	2.15
COFC1	COLFAX	0.03	7.99	4.35	12.29	18.34	8	2.36	4.41	0.05	0	0	2.24
GRAC1	GRASS VALLEY NO. 2	0.92	8.38	4.72	13.1	21.93	8.17	2.89	5.37	0.36	0	0	2.31
NVDC1	NEVADA CITY	0.53	8.61	4.87	14.2	26.76	8.64	3.49	5.83	1.05	0	0	2.66
Growing Season Average Precip		0.67	7.64	3.91	11.13	19.21	7.15	2.43	4.30	0.37	0.00	0.00	2.34
Effective Precip % Based on FAO Table		29%	68%	54%	68%	18%	67%	44%	56%	0%	--	--	43%
Effective Precip (in)		0.20	5.17	2.10	7.52	3.37	4.77	1.07	2.40	0.00	0.00	0.00	1.01
Irrigated Acres (Crop Reports)		915						32,205					
Water Year Effective Precip (AF)		1,763						12,012					

WY 2020 Precipitation Data (in)

ID	Location	2019 OCT	NOV	DEC	2020 JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
AUBC1	AUBURN	0.01	0.55	4.38	2.88	0	5.29	2.24	2.34	0.17	0.01	0	0.01
COFC1	COLFAX	0	2.6	9.4	4.27	0.04	7.66	4.79	4.52	0.01	0	0	0.01
GRAC1	GRASS VALLEY NO. 2	0.04	1.68	11.54	4.07	0	7.38	4.69	4.11	0.03	0	0.02	0.02
NVDC1	NEVADA CITY	0.05	0.71	12.01	4.8	0	8.75	5.3	4.23	0	0	0	0.03
Growing Season Average Precip		0.03	1.39	9.33	4.01	0.01	7.27	4.26	3.80	0.05	0.00	0.01	0.02
Effective Precip % Based on FAO Table		0%	36%	69%	54%	0%	67%	56%	53%	0%	0%	0%	0%
Effective Precip (in)		0.00	0.49	6.47	2.17	0.00	4.87	2.36	2.01	0.00	0.00	0.00	0.00
Irrigated Acres (Crop Reports)		1,542						32,323					
Water Year Effective Precip (AF)		1,799						11,781					

Water Budget Method (INFLOW) - Effective Precipitation

Effective precipitation estimates

http://www.fao.org/3/s2022e/s2022e03.htm

Precip mm/month	Effective Precip mm/month	Precip in/month	Effective Precip in/month	as Percentage
0	0	0.00	0.00	0%
10	0	0.39	0.00	0%
20	2	0.79	0.08	10%
30	8	1.18	0.31	27%
40	14	1.57	0.55	35%
50	20	1.97	0.79	40%
60	26	2.36	1.02	43%
70	32	2.76	1.26	46%
80	39	3.15	1.54	49%
90	47	3.54	1.85	52%
100	55	3.94	2.17	55%
110	63	4.33	2.48	57%
120	71	4.72	2.80	59%
130	79	5.12	3.11	61%
140	87	5.51	3.43	62%
150	95	5.91	3.74	63%
160	103	6.30	4.06	64%
170	111	6.69	4.37	65%
180	119	7.09	4.69	66%
190	127	7.48	5.00	67%
200	135	7.87	5.31	68%
210	143	8.27	5.63	68%
220	151	8.66	5.94	69%
230	159	9.06	6.26	69%
240	167	9.45	6.57	70%
250	175	9.84	6.89	70%

Agricultural Water Use Efficiency

A Proposed Methodology for Quantifying the Efficiency of Agricultural Water Use - DWR

Method 1 - Crop Consumptive Use Fraction (CCUF) = (ETAW)/(AW)

2020

Evapotranspiration of Applied Water (ETAW)	Applied Water (AW)	Crop Consumptive Use Fraction
Acre-Feet per Year	Acre-Feet per Year	
90,660	109,016	83%

ETAW = Evapotranspiration (AWMP Table 5-2) - Effective Precip (AWMP Table 5-1)

AW from AWMP Table 3-1

Nevada Irrigation District

Agricultural Water Management Plan

Draft Final
April 14, 2021

Nevada Irrigation District

Agricultural Water Management Plan

Draft Final
April 14, 2021

Jim Crowley
Ca PE 52181
Insert stamp for final

ZANJERO

Draft AWMP Table of Contents

List of Acronyms and Abbreviations

Act	Agricultural Water Management Planning Act
AF	Acre-feet
AFY	Acre-feet per year
AW	Applied Water
AWMP	Agricultural Water Management Plan
BMP	Best Management Practice
CABY	Cosumnes, American, Bear, Yuba Integrated Regional Water Management Group
CCU	Crop Consumptive Use
CDFW	California Department of Fish and Wildlife
CIMIS	California Irrigation Management Information System
CWC	California Water Code
DEW	Drier, extreme warming scenario
District	Nevada Irrigation District
DWR	California Department of Water Resources
EP	Effective Precipitation
EQIP	Environmental Quality Incentives Program
ET	Evapotranspiration
ETo	Reference Evapotranspiration
ETAW	Evapotranspiration of Applied Water
EWMP	Efficient Water Management Practices
FAO	Food and Agriculture Organization
FERC	Federal Energy Regulatory Commission
°F	Degrees Fahrenheit
ft	Feet/Foot
GCM	Global Climate Models
GIS	Geographical Information System
hp	Horsepower
MI	Miner's Inch
ml	Milliliter
MPN	Most Probable Number
M&I	Municipal and Industrial
N/A	Not Applicable
NID	Nevada Irrigation District
NRCS	Natural Resource Conservation Service
PCWA	Placer County Water Agency
PFW	Plan for Water
PG&E	Pacific Gas and Electric
PNSSNS	Placer/Nevada/South Sutter/North Sacramento
RCD	Resource Conservation District
SVI	Sacramento Valley Index
SVWQC	Sacramento Valley Water Quality Coalition
SWP	State Water Project
SWRCB	California State Water Resource Control Board
TOC	Total Organic Carbon
UC	University of California
USBR	United States Bureau of Reclamation

USDA	United States Department of Agriculture	WMW	Wetter, moderate warming scenario
USGS	United States Geological Survey	WRCC	Western Regional Climate Center
WHO	Water and Hydroelectric Operations	WTP	Water Treatment Plant
		WWTP	Wastewater Treatment Plant

1 Agricultural Water Management Plan Introduction and Overview

This AWMP is the year 2020 AWMP as required by the Agricultural Water Management Planning Act (Act), pursuant to California Water Code (CWC) Section 10820(a). The Act requires all agricultural water suppliers that provide water to 10,000 or more irrigated acres within their service area to prepare an Agricultural Water Management Plan (AWMP or Plan). This AWMP was prepared under direction of the Nevada Irrigation District (District) staff.

This AWMP addresses the District's water system and includes a description of the service area, water uses, water resources, and a comparison of water supply and water demands during the planning cycle (2016 through 2020). Also described are the District's water supply reliability, water use efficiency information, and drought plan. The Plan presents NID's past data and current operations, rules, and regulations as provided to develop the document.

The organization of this 2020 update generally follows the outline presented in the DRAFT DWR 2020 AWMP Guidebook. The final guidebook has not yet been released. This 2020 update solely addresses the legislative requirements. Relevant sections of the CWC are presented in italics throughout the plan to provide context to the respective section.

1.1 Agricultural Water Management Planning Act

10608.12(a) "Agricultural water supplier" means a water supplier, either publicly or privately owned, providing water to 10,000 or more irrigated acres, excluding recycled water.

10820(a)(2)(A). The agricultural water management plan shall be updated on or before April 1, 2021, and thereafter on or before April 1 in the years ending in six and one.

NID is defined as an agricultural supplier per CWC Section 10608.12(a), and therefore, is required to update the AWMP per CWC Section 10820(a)(2)(A). The Act describes the contents of the AWMP as well as how agricultural water suppliers should adopt and implement the AWMP. The current version of the Act requires an AWMP to include:

- Description of agricultural water supplier and service area.
- Information on quantity of water uses.
- Description of quantity and quality of water supplies.
- Analysis of water supply reliability.
- Annual water budget based on quantification of all inflow and outflow components for the service area.
- Identification of water management objectives aimed at improving system efficiency or to meet other water management objectives.
- Quantification of water use efficiency using the methods(s) presented in DWR's 2012 Report to the Legislature, "A Proposed Methodology for Quantifying the Efficiency of Agriculture Water Use." The quantification for the efficiency of agriculture water use must account for all water uses, including crop water, agronomic, environmental, and recoverable surface flows.
- Inclusion of a Drought Plan for periods of limited water supplies available to the supplier. The Drought Plan describes actions for resilience and response planning.

In addition to the general requirements above, the Act includes submittal requirements:

- AWMP is to be adopted on/before April 1, 2021 (and every five years following).
- AWMP must be submitted electronically to DWR.

1.2 Description of Previous Water Management Activities

10826(e). Describe previous water management activities.

The District maintains an active and ongoing water resources planning program. Policy and strategic efforts are set by the Board of Directors through the Board's Strategic Plan, specific resolutions, and directions to staff. Previous planning efforts included AWMPs, Urban Water Management Plans, Integrated Regional Water Resource Management Plans through the Cosumnes/American/Bear/Yuba (CABY) group, Federal Energy Regulatory Commission license, and the Raw Water Master Plan. The most recent Board of Directors' District Goals identified the importance of developing and managing the District's resources in a self-determining manner to protect and provide local control of the water supply. The District is implementing this goal through the Plan for Water Program. Plan for Water (PFW) is an overarching effort to evaluate all the District's natural resources, the community's need for the resources, and developing strategies to match resources with the needs. PFW is an ongoing process that will continually evaluate data and trends to update and refine the water resource management strategies into the future.

1.3 Coordination Activities

The following subsections describe the District's actions to comply with the coordination requirements, including notification and public participation.

1.3.1 Notification of AWMP Preparation

10821(a). An agricultural water supplier required to prepare a plan pursuant to this part shall notify each city or county within which the supplier provides water supplies that the agricultural water supplier will be preparing the plan or reviewing the plan and considering amendments or changes to the plan. The agricultural water supplier may consult with, and obtain comments from, each city or county that receives notice pursuant to this subdivision.

The District notified cities and counties within the service area that this AWMP was being updated. The notification was mailed December 11, 2020 to the cities and counties as well as other stakeholders as listed in Appendix A. Table 1-1 provides a summary of the AWMP coordination.

Table 1-1. (DWR Worksheet 1) Summary of Coordination, Adoption, and Submittal Activities. - (not final until Board approved and submitted to State)

Potential interested parties	Notified of AWMP preparation	Requested copy of draft	Commented on the draft/action taken by supplier	Notified of public hearing	Attended public hearing	Copy of AWMP sent (date sent)
Nevada County	X					
Placer County	X					
Yuba County	X					
City of Grass Valley	X					
City of Nevada City	X					
City of Lincoln	X					
Yuba Water Agency	X					
Placer County Water Agency	X					
Placer County Agricultural Commissioner	X					
Placer County Farm Bureau	X					
Nevada County Agricultural Commissioner	X					
Nevada County Farm Bureau	X					
General public	X					
District Website	12/11/2020	--	--	--	--	--

1.3.2 Public Participation

10841. Prior to adopting a plan, the agricultural water supplier shall make the proposed plan available for public inspection, and shall hold a public hearing on the plan. Prior to the hearing, notice of the time and place of hearing shall be published within the jurisdiction of the publicly owned agricultural water supplier pursuant to Section 6066 of the Government Code.

NID conducted public outreach through a variety of efforts. A news release as well as a website posting were released on and around December 11, 2020 announcing the District's efforts to update the AWMP and the Urban Water Management Plan. A Board workshop was held on March 10, 2021 and March 18, 2021 to review the AWMP requirements and present the District's approach to the draft plan. The Board workshops were publicized per normal Board of Directors meeting notification.

A public hearing was conducted on March 24, 2021 to present the Draft Plan and receive public input. The Draft Plan was provided to the public through the District's website for download seven days prior to the public hearing with reference to its location provided in public hearing notice. The public hearing was noticed in the Auburn Journal and Lincoln News Messenger , pursuant to Section 6066 of the Government Code.

The District received public comment at each meeting as well as submitted comments as included in Appendix A. The District updated and edited the draft Plan per corrections and clarifications.

A copy of the published Notice of Public Hearing is included in Appendix A. The public review comments received are also provided in Appendix A.

1.4 AWMP Adoption, Submittal and Availability

10841. After the [public] hearing, the plan shall be adopted as prepared or as modified during or after the hearing.

10820(a)(2)(B). An agricultural water supplier shall submit its plan to the department no later than 30 days after the adoption of the plan. The plan shall be submitted electronically and shall include any standardized forms, tables, or displays specified by the department.

10843(a). An agricultural water supplier shall submit to the entities identified in subdivision (b) a copy of its plan no later than 30 days after review of the plan pursuant to subdivision (b) of Section 10820.
(b) An agricultural water supplier shall submit a copy of its plan to each of the following entities:
(1) The department.
(2) Any city, county, or city and county within which the agricultural water supplier provides water supplies.
(3) Any groundwater management entity within which jurisdiction the agricultural water supplier extracts or provides water supplies.
(4) The California State Library.

10844(a). Not later than 30 days after the date of adopting its plan, the agricultural water supplier shall make the plan available for public review on the agricultural water supplier's Internet Web site.

This 2020 AWMP was adopted by resolution of the District's Board of Directors on DATE. A copy of Board Resolution No. XXX is included in Appendix B.

The District submitted this AWMP electronically to DWR for review on DATE, The DWR Plan review checklist is presented in Appendix C.

The District has made this adopted AWMP publicly available at the following locations (within 30 days after adoption);

- District Administration building
- District website (www.nidwater.com)

1.5 AWMP Implementation Schedule

10842. An agricultural water supplier shall implement the plan adopted pursuant to this chapter in accordance with the schedule set forth in its plan, as determined by the governing body of the agricultural water supplier.

The District will utilize the findings in this AWMP to inform its ongoing water management programs, as well as help inform the Plan for Water process. The District will continue to implement the efficient water management programs, water measurement practices, and water supply management practices described in this AWMP.

2 Description of Service Area

10826(a). Describe the agricultural water supplier and the service area, including all of the following:
(1) Size of the service area
(2) Location of the service area and its water management facilities
(3) Terrain and soils
(4) Climate
(5) Operating rules and regulations
(6) Water delivery measurements or calculations
(7) Water rate schedules and billing
(8) Water shortage allocation policies

The District was organized in 1921 under the California Irrigation District Act of 1897 as a nonprofit water agency, and operates under Division 11 of the State Water Code. NID is governed by a five-member Board who are elected by qualified District voters. Each Board member, representing a division with the District, serves a four-year term.

In addition to agriculture water deliveries (raw water), NID supplies treated water for municipal, domestic, and industrial purposes. Many parcels within the District service area are supplied by private wells and are not currently receiving District-supplied water.

The District also owns and operates hydroelectric generation and recreational facilities. The hydroelectric facilities have a capacity of 82.2 megawatts and produce approximately 375 million kilowatt hours per year. NID began producing power in 1966 with the completion of the Yuba-Bear Power Project, which includes Chicago Park, Dutch Flat, Bowman, and Rollins powerhouses. Recreational facilities owned by the District provide camping, fishing, and boating at Rollins Lake, Scotts Flat Reservoir, and Jackson Meadows – Bowman Lake areas.

Table 2-1 summarized the District's history and size, which is further detailed below. Service area gross acreage is determined through GIS mapping. Irrigated area acreage is determined from the annual customer self-reported surveys used to develop the crop reports.

Table 2-1. (DWR Worksheet 2) District History and Size

Date of Formation	August 15, 1921
Source of Water	
Local Surface Water	X
Local Groundwater	
Wholesaler	X (PG&E)
USBR	
SWP	
Service Area Gross Acreage[1]	287,000
Service Area Irrigated Acreage[2]	32,323

[1]Gross Acreage represents 2020 total area within service area boundary
[2]Irrigated Acreage from 2020 Crop Report

2.1 Physical Characteristics

Located on the western slope of the Sierra Nevada mountain range, the District encompasses 287,000 acres and covers portions of three counties: Nevada, Placer, and Yuba as shown on Figure 2-1. The

District's watershed is located on the upper reaches of the Yuba River, Bear River, and Deer Creek. The highest peak in the District is at 8,373 foot elevation at English Mountain. Ground elevations within the District's service area range from approximately 3,900 feet (ft) on Banner Mountain above Nevada City at the eastern edge of the District, down to about 200 ft near the City of Lincoln. The District transports raw water from high elevation mountain reservoirs to the lower elevation foothills and into portions of the northern Sacramento valley near the City of Lincoln. The District provides raw water to agricultural customers and some other municipal providers, and treated water to its own customers and some other municipal providers.

There have been no changes to the service area boundaries since the 2015 AWMP. The District considers service area expansion requests on a case-by-case basis. The District also receives new service request from parcels within its service area. Over the past five years, the District averaged approximately 20 new agricultural customers per year. Table 2-2 summarizes the expected changes to service area.

Table 2-2. (DWR Worksheet 3) Expected Changes to Service Area

Change to Service Area	Estimate of Magnitude	Effect on the Water Supplier
Reduced Service Area Size	0	None
Increased Service Area Size	0	None
New Governmental Entity	--	None
New Ag Customers Within Service Area	Since 2014, average of 20 new customers/ year, future connection projections will be addressed in Plan for Water.	Increased irrigated acreage, increased demand that must be met with District's supplies.

NID's water management facilities include storage, treatment, and conveyance facilities. The District operates and maintains nine reservoirs with a combined storage total of 280,085 acre-feet (AF). Capacities of the reservoirs are shown in Table 2-3. The two major distribution and storage systems within the District are the Deer Creek System and the Bear River System. These systems are a mixture of canals, siphons, pipelines, and other water conveyance structures. The locations of the reservoirs are shown on Figure 2-1. Table 2-4 presents a summary of conveyance and delivery infrastructure.

The system is supplied by diverting water per NID's surface water rights into the canals at either reservoirs or at other diversion facilities located on the streams. Typical canal operations divert enough flow to allow the purchased deliveries to each customer on the canal. To maintain proper flow rates through customer delivery points, the water surface in the canal is maintained at certain levels, as is typical for miner's inch delivery systems. However, this also results in water exiting the canal at the downstream terminus. Many of these spills are then captured again at the next downstream diversion point for another canal.

Table 2-3. (DWR Worksheet 5) Water Supplier Reservoirs

Reservoir	Capacity, AF
Jackson Meadows	69,205
Bowman	68,510
Jackson Lake	1,330
Sawmill	3,030
Faucherie	3,980
French	13,940
Rollins	65,988
Scotts Flat	48,547
Combie	5,555
Total Capacity	280,085

Source: NID website – accessed December 12, 2020

Table 2-4. (DWR Worksheet 4) Water Conveyance and Delivery System

System Used	Number of Miles
Canal	340
Flume	9
Penstock	1
Other/Creek	35
Siphon/Pipe	91
Tunnel	8

Source: NID GIS

The District does not have a formal tailwater recovery system with respect to capture of on-farm and field runoff. This District is in the process of installing spill measurement on some of its canals and will install more pending available funding. This District is not aware of any grower operated tailwater systems. Tailwater status is summarized in Table 2-5

Table 2-5. (DWR Worksheet 5) Tailwater/Spill Recovery System

System	Yes/No
District Operated tailwater/spill recovery	No
Grower Operated tailwater/spill recovery	No

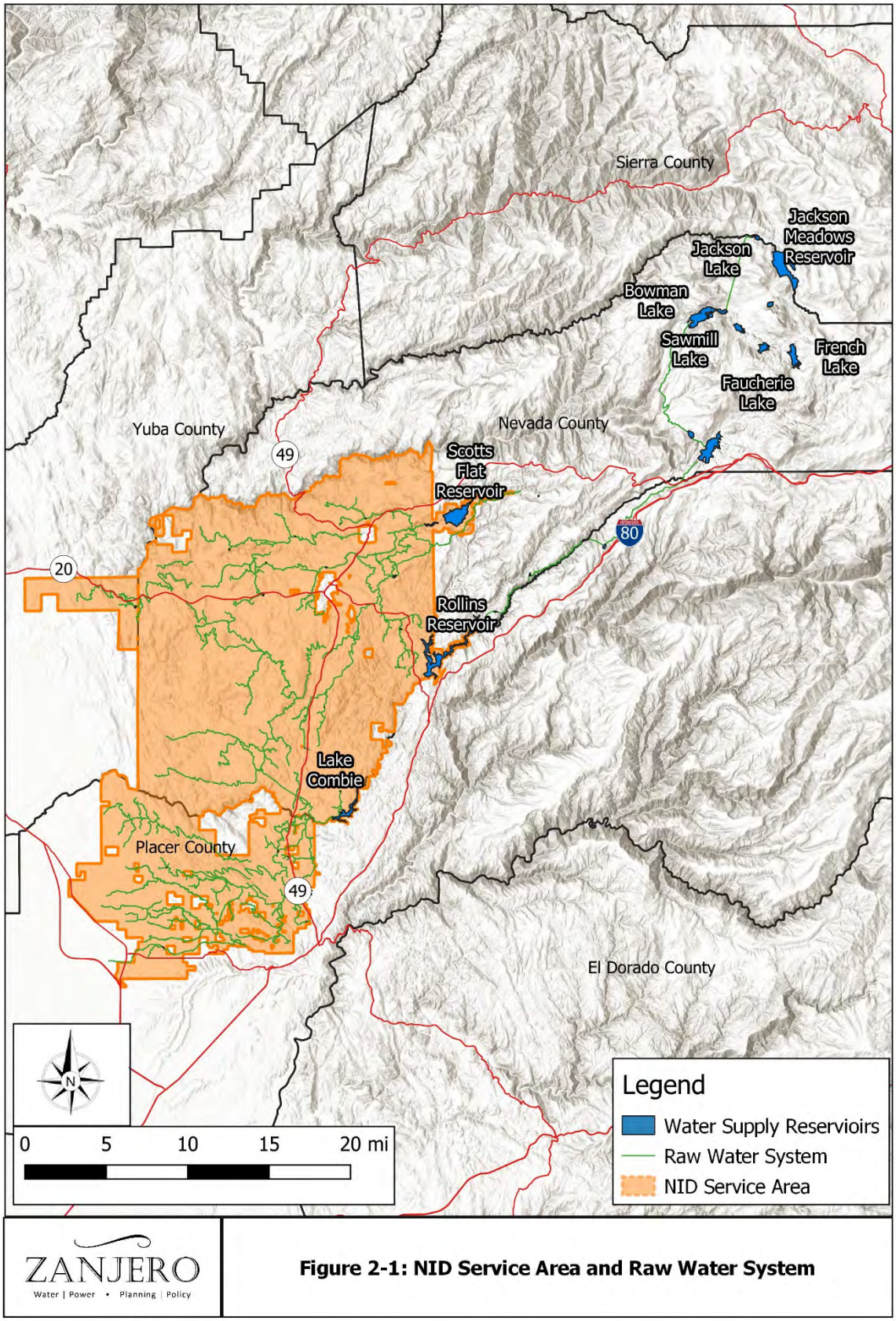


Figure 2-1: NID Service Area and Raw Water System

2.1.1 Terrain and Soils

The service area covers the Sierra Nevada foothills, which is very different than agricultural areas in the Sacramento and San Joaquin Valleys. The service area topography contains many sloped areas with rock outcroppings, as well as less sloped areas better suited for pasture, orchards, and row crops. The foothill area contains numerous fractured rock systems that allow for private wells, but also complicate the ability to understand and quantify percolation and subsurface systems. Soil types, infiltration rates, and water holding capacities vary widely from a clay dominant soil type to a sandy, alluvial soil type in valley areas. Assumptions regarding percolation and other soil parameters are further discussed in Section 5 – Water Budget. A summary of the soil types within the District service area is provided in Table 2-6.

Table 2-6. (DWR Worksheet 7) Landscape Characteristics

Topography Characteristic (slope percent)	% of the District
<5	19%
5 to 10	15%
10 to 20	27%
20 to 40	33%
40 to 60	4%
>60	1%
Unknown	1%
Soil Characteristic/Classification	**% of the District**
Complex	21%
Gravelly Loam	5%
Loam	16%
Outcrop Complex	6%
Rock Outcrop Complex	16%
Sandy Loam	12%

Source: NID 2015 AWMP based on the Soil Survey Geographic Database (SSURGO) provided by the National Cooperative Soil Survey.

2.1.2 Climate

Summers are generally dry with mild to hot temperatures. Winters are relatively wet, especially in the upper elevations around Nevada City and Grass Valley, with snow levels usually around 3,500 ft and occasionally as low as 1,000 ft. Based on the historical data obtained from the California Irrigation Management Information System (CIMIS) and the Western Regional Climate Center (WRCC), the District's service area's average minimum and maximum monthly temperatures range from 26.4 to 92.5 degrees Fahrenheit. Table 2-7 summarizes the District's climate conditions in representative areas based on the CIMIS and WRCC databases of monthly averages of historic information.

Table 2-7. (DWR Worksheet 9) District Service Area Climate Characteristics

Location	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual	Wet season (Nov-Mar)	Dry season (Apr-Oct)
Auburn (CIMIS Station No.195, WRCC Station No. 040383), 935' elev.															
Avg. ETo[1], in	1.13	1.83	3.05	4.62	6.23	7.46	8.28	7.57	5.66	3.77	1.78	1.02	52.42	8.81	39.62
Avg. max temp[2], °F	54.0	58.3	62.0	68.3	76.2	85.3	92.5	91.5	86.2	76.6	63.2	54.9	72.4	58.5	83.3
Avg. min temp[2], °F	36.6	39.3	41.4	44.8	50.3	56.5	61.8	61.0	57.3	50.7	42.9	36.8	48.3	39.4	55.28
Avg. rainfall[2], in	6.71	5.96	5.35	2.70	1.26	0.38	0.05	0.07	0.42	1.78	4.01	5.71	34.39	27.7	4.88
Avg. snowfall[2], in	0.4	0.2	0.2	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.3	1.3	1.2	0.2
Grass Valley No. 2 (WRCC Station No. 043573)[3], 2,400' elev.															
Avg. ETo, in	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Avg. max temp, °F	53.5	55.2	37.5	62.1	71.0	79.5	87.4	87.1	82.2	72.1	59.6	53.1	68.3	51.8	78.2
Avg min temp, °F	32.0	33.6	36.0	38.8	45.4	51.3	56.2	55.0	50.5	42.9	36.2	31.7	42.5	33.9	49.5
Avg rainfall, in	9.69	8.56	8.32	4.02	1.97	0.68	0.12	0.21	0.79	2.70	6.73	9.46	53.26	42.8	7.8
Avg snowfall, in	2.2	2.5	2.4	0.8	0.0	0.0	0.0	0.0	0.0	0.0	0.3	1.9	10.0	9.3	0.8
Nevada City (WRCC Station No. 046136)[4], 2,780' elev.															
Avg. ETo, in	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Avg. max temp, °F	50.7	53.3	56.7	63.2	71.0	79.8	88.4	87.4	81.5	71.0	58.7	51.4	67.7	54.2	78.6
Avg. min temp, °F	30.4	31.7	33.7	36.8	42.5	48.2	52.7	51.4	47.0	41.1	34.7	30.9	40.1	32.3	46.4
Avg. rainfall, in	10.22	9.29	8.20	4.34	2.21	0.65	0.05	0.14	0.76	2.86	6.22	9.37	54.31	43.3	8.15
Avg. snowfall, in	7.9	5.9	5.7	0.9	0.2	0.0	0.0	0.0	0.0	0.0	0.7	3.6	24.8	23.8	1.1

Table 2-7. (DWR Worksheet 9) District Service Area Climate Characteristics, continued

Location	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual	Wet season (Nov-Mar)	Dry season (Apr-Oct)
Bowman Dam (WRCC Station No. 041018)[5], 5,390' elev.															
Avg. ETo, in	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Avg. max temp, °F	45.0	46.1	49.5	55.2	63.7	72.1	80.0	79.8	73.8	64.1	52.8	46.1	60.7	47.9	70.8
Avg. min temp, °F	26.4	26.6	28.6	32.5	39.2	46.7	53.4	53.2	48.4	41.2	33.4	33.4	38.2	29.7	45.6
Avg. rainfall, in	11.74	10.06	9.09	4.56	3.49	1.24	0.20	0.40	0.90	4.14	8.14	10.83	64.78	49.9	10.8
Avg. snowfall, in	53.1	49.8	48.1	21.2	7.0	0.3	0.0	0.0	0.3	2.6	19.6	39.9	242.0	210.5	28.8

N/A = not available

[1]Period of record is 1/1/2005 through 12/31/2020.

[2]Period of record is 1/1/1905 through 6/10/2016.

[3]Period of record is 10/1/1966 through 6/10/2016.

[4]Period of record is 2/1/1893 through 6/10/2016.

[5]Period of record is 6/1/1896 through 5/31/2016.

2.2 Operational Characteristics

This subsection describes the operating rules and regulations for water delivery and billing, and allocation policies during water shortages.

2.2.1 Operating Rules and Regulations

The Board establishes and adopts the policies of the District and the Water Service Regulations. The Water Service Regulations provide for the equitable distribution and use of water within the service area. The Board reviews and makes revisions or amendments to the regulations as necessary. The most recent version of the District's Water Service Regulations (dated September 18, 2020) is included as Appendix D.

Water customers receive raw water through a variety of delivery systems and periods, as summarized in Table 2-8. The majority of raw water use is irrigation season (April 15-October 14). Fall and Winter use is available for purchase as available and often corresponds with dry Fall and Winter periods. NID provides a small percentage of raw water as wholesale water to other municipal water agencies. At times as available and as needed, NID will also provide raw water to other local or regional water providers on a case-by-case basis. The District also provides raw water intermittently through the other minor delivery methods as identified in Table 2-8.

The District sells agricultural and raw water based on flow and volume basis, depending on customer type, as identified in Table 2-9. The majority of irrigation customers are provided water based on miner's inch deliveries. Some of the wholesale sales to other agencies are based on volume and flow values per the purchase contracts

Purchase and ordering are also dependent on customer type and water type. Seasonal irrigation use is ordered by customers with at least a 48-hour lead time. Wholesale customers have annual water contracts that identify maximum flows and/or volumes over time. Other types of water orders also require a 48-hour lead time. Similarly, water shutoffs require at least a 24-hour lead time. Ordering times are summarized in Table 2-10.

Table 2-8. (DWR Worksheet 10) Supplier Delivery System (2020)

Type	Checked if Used
Seasonal Irrigation Service	X
Fall/Winter Water Service	X
Annual Raw Water Service	X
Intermittent Flow Service	X
Demand Water Service	X
Tank or Temporary Construction Water Service	X
Surplus Water Service (outside the District Service Area Boundaries)	X
Rotation	X

Table 2-9. (DWR Worksheet 11) Water Allocation Policy

Basis of Water Allocation	Checked if Used			Allocation	
	Flow	Volume	Seasonal Allocations	Normal Year	% of Water Deliveries
Area within the Service Area	X	X	X	100%	100%
Amount of Land Owned					
Riparian Rights					
Other					

Table 2-10. (DWR Worksheet 12) Actual Lead Times

Operations	Hour/Days
Water Orders	48 Hours
Water Shut-Off	24 Hours

2.2.2 Water Delivery Measurement or Calculations

The majority of the District's irrigation customers purchase irrigation season water, April 15 through October 14, based on miner's inch. The standard measurement for a miner's inch requires a six-inch head of water over the center of the orifice and the water to free flow through the delivery point. For customers that purchase 40 miner's inches or less, the amount of water is delivered through a standard water box and measured through an orifice sized for the amount of water purchased and the available head pressure. For purchases greater than 40 miner's inches, the measurement may be by any industry standard device such as a weir or Parshall flume that will give the most accurate measurement for the situation. Orifices used for customer delivery are checked at a minimum of twice a year for proper sizing, adequate head pressure, and condition of the service point. Flowmeters are included in a maintenance management program and are inspected annually and calibrated according to manufacturer recommendations. Records are kept stating when customer services are turned on and off to assist in calculating the volume of water delivered.

Field checks on canal measuring stations occur three to four times per year. This continual verification allows the District to maintain proper and accurate measurement records (Teledyne, 2016 and USBR, rev. 2001). Open channel flow sites are inspected to ensure structures are plumb, staff gages are level with flume floors and weir crests, approach flows are laminar, and that no backwater conditions exist in the tailrace of the structures. Current meters are used as a secondary verification to confirm the volume of flow.

Table 2-11 summarizes the measurement devices used by the District to measure water in the canals and deliveries to agricultural water customers, frequency of calibration and maintenance, and the estimated level of accuracy of the measurement devices. Additional water measurement information per the AWMP code requirements is provided in Section 8 and Appendix G.

Table 2-11. (DWR Worksheet 13) Water Delivery Measurements

Measurement Device	Frequency of Calibration, months	Frequency of Maintenance, months	Estimated Level of Accuracy, Error %
Orifice	Bi-Annual	Annual	5-12%
Flow meter	Bi-Annual	Annual	2-5%
Parshall Flume	Annual	Annual	5-12%
Uncontrolled flume sections	Annual	Annual	5-12%

While accuracy for weirs and flumes is likely better in laboratory-controlled environments, field conditions likely degrade accuracies. Due to the frequency of inspections and site management, District weirs, flumes and orifices have an estimated accuracy of 5-12 percent while flowmeter estimated accuracy is 2-5 percent. These values represent the District's best estimate with the existing facilities and information available.

2.2.3 Water Rate Schedules and Billing

This District's current rate schedule is provided in Appendix D. Raw water rates are a uniform volumetric charge, consisting of a combination of fixed charge (a constant fee assessed to customer) and a water rate (a price per unit of water delivered). Raw water is sold by quantity in increments of either miner's inches or acre feet. The District has several rate schedules for raw water depending on the type of service provided. All water rates are determined on a cost of service basis, consistent with Proposition 218.

Similar to rates, the District also has several billing frequencies depending on the type of service. For a seasonal irrigation service, the customer has the choice of paying the amount in full or making payments in three installments. Most of the raw water customers purchase water for the summer irrigation season (April 15 to October 14). Tables 2-12, 2-13, and 2-14 describe relevant information from the District's current agricultural water rates.

Table 2-12. (DWR Worksheet 14) Water Rate Basis

Water Charge Basis	Check if Used	% of Water Deliveries	Description
Volume of Water Delivered	X	100%	Based on water volume ordered in miners inch
Rate and Duration of Water Delivered			
Acre			
Crop			
Land Assessment			
Other			

Table 2-13. (DWR Worksheet 15) Rate Structure

Type of Billing	Check if Used	Description
Declining		
Uniform	X	Based on volume ordered
Increasing Block Rate		
Other	X	Fixed fee

Table 2-14. (DWR Worksheet 16) Frequency of Billing

Frequency	Check if Used
Weekly	
Biweekly	
Monthly	X
Bimonthly	
Tri-Annually	
Annually	X

2.3 Drought Plan and Water Shortage Allocations Policies

The purpose of the Nevada Irrigation District's Drought Plan is to provide guidance to staff and customers to help minimize drought or water supply shortage impacts. The plan identifies drought action levels, appropriate agency responses, water demand reduction goals, and provides recommended demand management measures to assist customers in water conservation. This following drought plan is presented in accordance with the Urban Water Management Plan water shortage contingency plan requirements in order to maintain consistency across both documents.

2.3.1 Vulnerability to Drought

As described in Sections 4 and 6, the District's water supplies are vulnerable to drought and are expected to be further impacted by climate change. The supply system relies on spring and summer snow melt runoff, as well as capture and storage in reservoirs to release during the irrigation season. During droughts and periods of warmer winters when there is less snowpack, runoff is reduced, and the District must manage its storage and customer demands to meet requirements. The supply availability reduction is dependent on the severity and length of the drought. In addition to the hydrologic impacts on NID's supplies, there can also be regulatory reduction as well, as during the last drought the State mandated supply curtailments and NID was not able to access its available supply.

2.3.2 Resiliency Planning

NID conducts ongoing analysis of its supply reliability and reports on current understanding through its various planning efforts including the Urban Water Management Plan, Plan for Water, Staff Reports to Board, Raw Water Master Plan, and others. Plan for Water is the District's overarching integrated water resources planning effort. As part of the Plan for Water process, NID has developed a climate change hydrologic model to project and analyze supply availability under different climate change scenarios. Findings from this process will then be used to identify and evaluate mitigation measures. Mitigation measures could include the following:

- Data gathering and information analysis enhancement to further inform decision making
- Hydrologic modeling enhancements
- Demand reduction measures
- Supply augmentation opportunities
- Policy enhancements

The Plan for Water process is ongoing and has not yet begun the mitigation measure evaluation phase. The Plan for Water process is a deliberate, phased approach including customer and stakeholder involvement, and will continue for many months. Once the process develops mitigation strategies and decision support frameworks, NID will update the resiliency planning efforts in the next AWMP. As the Plan for Water process is developing mitigation measures for drought resiliency, NID will continue to implement its current drought and water shortage contingency efforts as described below.

2.3.3 Annual Water Supply and Demand Assessment Procedures

NID conducts an annual analysis of supply and demand projections to help inform water resources management decisions for the coming year. The analysis incorporates various data sources used as evaluation criteria to project probable demands and supply availability for the coming year. Data sources to consider include:

- Projected weather conditions
    - Precipitation versus historical on monthly basis
    - Snow survey results
- Projected Unconstrained Demand
    - Production versus historic on monthly basis
    - New customer growth
    - Water use objective monthly tracking versus goal
    - Identify demand for treated water-supplied water features separate from swimming pools and parks
- • Projected Supply Availability (assuming no constraints)
    - Reservoir storage
    - Forecasted runoff
    - PGE contract water
    - Recycled water

The general procedure is listed below. NID may modify this process based on available data, significant events, process restrictions, or other external factors that may impact the process.

1. Dry Year Projection
Compile existing weather data to characterize past 12 months conditions. Considering recent conditions and available forecasts, select a projected dry year scenario from the historical precipitation record. Dry year scenario to be at least 60 percent of normal precipitation at the Bowman Lake Reporting Station.

2. Demand Projection
Project unconstrained monthly demand for the next 12 months factoring in existing demands, water use budgets, weather projections, and growth projections.

3. Project Supply Availability
Utilize the existing conditions coupled with historic availability and other known conditions to project probable monthly availability. Summarize the current supply availability over the next 12 months

assuming no supply restrictions. Project next year supply availability over the next 12 months assuming the next year is a dry year as selected in Step 1.

4. Supply Infrastructure Restraints
Identify and describe any projected infrastructure restrictions to delivering supply in the next 12 months.

5. Project Next Year Supply Deliverability
Using results from Steps 3 and 4, identify the current conditions normal year and dry year projected supply delivery for the next 12 months.

6. Projected Dry Year Supply to Demand Comparison
Compare the projected next year unconstrained demand to the next year dry-year projected supply deliverability. Identify any projected seasonal shortfall in supply to meet the unconstrained demand, cross referencing the condition to one of the six water shortage levels identified below in this plan.

7. Develop and propose water resource management strategies to address the projected demand to supply comparison, including reference to the one of the water shortage stages identified in this section below.

8. The annual water supply demand assessment is presented to the Board of Directors for discussion and questions. Staff will modify/update the assessment per direction from the Board. The Board will approve the assessment and its findings, and can also provide direction to implement specific management strategies at that time. The general proposed timeline is as follows:

- Begin assessment by staff – February
- Present assessment to Board – no later than April
- Submit to State per CWC Section 10632.1 – by July 1

2.3.4 Water Shortage Stages and Responses

NID maintains this drought plan to identify and respond to potential and actual water shortage conditions. Six water shortage levels are presented per CWC Section 10632(a)(3). Proposed alternative response actions for each stage are identified with each respective projected impact on demand reduction or supply augmentation listed. NID will evaluate each specific shortage condition and select the appropriate response action(s) for implementation.

The District maintains a water conservation program that is ongoing, even during periods of normal water supply. The District has found this program to be effective in reducing overall water consumption and managing demands during periods of normal water supply and water shortage conditions. The District will rely on its regular conservation program as well as additional measures to respond to the range of water supply shortages that may arise.

Stage 1 – 10% Supply Shortage
Forecast April 1 Available Supply: 234,999 to 211,500 AF Actions include normal rules and regulations plus those listed below
Treated Water and Municipal Water Customers - Actions to Reduce Demand up to 10 Percent • Communicate conservation regulations as identified in Section 3.05 of District Rules and Regulations. • Encourage customers to limit outdoor irrigation to every other day. • Request fire department limit practices drills and hydrant flow testing.
Ag Water Customers - Actions to Reduce Demand up to 10 Percent • Allow Ag customers to voluntarily reduce purchase allotment for the year while reserving their right to return to their previous allotment in the following year if water supply is available.
District Actions • Declare no new or increased surplus water availability. • Leak repair receives higher priority. • Increase drought awareness through additional public outreach measures that notify public and customers for declared stage, requirements, and available conservation program support. • Standard rates in effect.
Enforcement Measures • Standard measures per District Rules and Regulations.

Stage 2 – 20% Supply Shortage
Forecast April 1 Available Supply: 211,499 to 188,000 AF Actions include Stage 1 plus those listed below
Treated Water and Municipal Water Customers - Actions to Reduce Demand up to 20 Percent • Outdoor irrigation limited to every other day and maximum three days per week. • Odd address number can irrigate outdoors on Tuesday, Thursday, and Saturday. • Even address number can irrigate outdoors on Wednesday, Friday, and Sunday. • Customers shall adjust irrigation controllers to reduce usage for each zone by 20 percent. • Corresponding to Fall Daylight Saving Time, customers shall strive to limit outdoor irrigation to only once per week.
Ag Water Customers - Actions to Reduce Demand up to 20 Percent • Limit new water sales and increases to 1 miners inch. • Impose changes to delivery schedules to achieve 20 percent demand reductions.
District Actions • Declare no new or increased surplus water availability. • Declare no new or increase in Fall/Winter deliveries. • Communicate mandatory reduction targets to customers. • Inform Municipal customers of mandatory 20 percent reduction requirement. • Distribution system flushing only for public health & safety. • Organize Drought Hardship Committee. • Purchase available Contract water to achieve a target carryover of 110,000 acre feet. • Implement Stage 2 conservation rates.
Enforcement Measures • A written warning will be issued for a first violation. • A District imposed fine of $250 for a second violation, and any subsequent violation, and doubling with each subsequent violation up to a maximum of $1,000 for any single violation. • Upon a fourth violation, or upon an earlier violation the General Manager determines to create a significant threat to the goals of the stage, the General Manager may order the installation of a flow restrictor on service lines in question. • Similar penalties, fines and charges may be implemented by the District as needed to enforce the restrictions on specific prohibited water uses.

Stage 3 – 30% Supply Shortage

Forecast April 1 Available Supply: 187,999 to 164,500 AF
Actions include Stage 2 plus those listed below

Treated Water and Municipal Water Customers - Actions to Reduce Demand up to 30 Percent

- Outdoor irrigation limited to two days per week.
- Odd address number can irrigate outdoors on Thursday and Sunday.
- Even address number can irrigate outdoors on Wednesday and Saturday.
- Customers shall adjust irrigation controllers to reduce usage for each zone by 30 percent.
- Irrigation of ornamental turf in public street medians with treated water prohibited.

Ag Water Customers - Actions to Reduce Demand up to 30 Percent

- Limit new water sale and increases to ½ miners inch.
- Impose changes to delivery schedules to achieve 30 percent demand reductions.

District Actions

- Declare no surplus water availability for exterior boundary customers.
- Declare no Fall water availability.
- Communicate mandatory reduction targets to customers.
- Inform Municipal customers of mandatory 30 percent reduction requirement.
- Purchase available Contract water to achieve a target carryover of 100,000 acre feet.
- Implement Stage 3 conservation rates.
- Dedicate additional staff for increased water waste patrols.

Enforcement Measures

- A written warning will be issued for a first violation.
- A District imposed fine of $250 for a second violation, and any subsequent violation, and doubling with each subsequent violation up to a maximum of $1,000 for any single violation.
- Upon a fourth violation, or upon an earlier violation the General Manager determines to create a significant threat to the goals of the stage, the General Manager may order the installation of a flow restrictor on service lines in question.
- Similar penalties, fines and charges may be implemented by the District as needed to enforce the restrictions on specific prohibited water uses.

Stage 4 – 40% Supply Shortage
Forecast April 1 Available Supply: 163,499 to 141,000 AF Actions include Stage 3 plus those listed below
Treated Water and Municipal Water Customers - Actions to Reduce Demand up to 40 Percent • Outdoor irrigation limited to one day per week. • Customers shall adjust irrigation controllers to reduce usage for each zone by 40 percent.
Ag Water Customers - Actions to Reduce Demand up to 40 Percent • Impose changes to delivery schedules to achieve 40 percent demand reductions.
District Actions • Declare no new or increased Ag sales. • Communicate mandatory reduction targets to customers. • Inform Municipal customers of mandatory 40 percent reduction requirement. • Purchase available Contract water to achieve a target carryover of 90,000 acre feet. • Implement Stage 4 conservation rates.
Enforcement Measures • A written warning will be issued for a first violation. • A District imposed fine of $250 for a second violation, and any subsequent violation, and doubling with each subsequent violation up to a maximum of $1,000 for any single violation. • Upon a fourth violation, or upon an earlier violation the General Manager determines to create a significant threat to the goals of the stage, the General Manager may order the installation of a flow restrictor on service lines in question. • Similar penalties, fines and charges may be implemented by the District as needed to enforce the restrictions on specific prohibited water uses.

Stage 5 – 50% Supply Shortage
Forecast April 1 Available Supply: 140,999 to 117,500 AF Actions include Stage 4 plus those listed below
Treated Water and Municipal Water Customers - Actions to Reduce Demand up to 50 Percent • Outdoor irrigation prohibited.
Ag Water Customers - Actions to Reduce Demand up to 50 Percent • Impose changes to delivery schedules to achieve 50 percent demand reductions.
District Actions • Communicate mandatory reduction targets to customers. • Inform Municipal customers of mandatory 50 percent reduction requirement. • Purchase available Contract water to achieve a target carryover of 80,000 acre feet. • Implement Stage 4 conservation rates.
Enforcement Measures • A written warning will be issued for a first violation. • A District imposed fine of $250 for a second violation, and any subsequent violation, and doubling with each subsequent violation up to a maximum of $1,000 for any single violation. • Upon a fourth violation, or upon an earlier violation the General Manager determines to create a significant threat to the goals of the stage, the General Manager may order the installation of a flow restrictor on service lines in question. • Similar penalties, fines and charges may be implemented by the District as needed to enforce the restrictions on specific prohibited water uses.

Stage 6 – Over 50% Supply Shortage
Forecast April 1 Available Supply: less than 117,500 AF Actions include Stage 5 plus those listed below
Treated Water and Municipal Water Customers - Actions to Reduce Demand greater than 50 Percent • Health and safety use of water only.
Ag Water Customers - Actions to Reduce Demand greater than 50 Percent • Impose changes to delivery schedules to achieve target demand reductions.
District Actions • Communicate mandatory reduction targets to customers. • Inform Municipal customers of mandatory health and safety use only. • Purchase available Contract water to achieve a target carryover of 75,000 acre feet. • Implement Stage 4 conservation rates. • Other actions as identified specific to the shortage condition.
Enforcement Measures • A written warning will be issued for a first violation. • A District imposed fine of $250 for a second violation, and any subsequent violation, and doubling with each subsequent violation up to a maximum of $1,000 for any single violation. • Upon a fourth violation, or upon an earlier violation the General Manager determines to create a significant threat to the goals of the stage, the General Manager may order the installation of a flow restrictor on service lines in question. • Similar penalties, fines and charges may be implemented by the District as needed to enforce the restrictions on specific prohibited water uses.

2.3.5 Communications

NID maintains an established and effective communications program to inform its customers, neighbors, and other stakeholders of issues, updates, and policies. Implementation of the drought plan will utilize the existing communication program structure to inform customers and others of the declared shortage stage and respective actions and restrictions in place.

The Board meetings addressing the Annual Water Supply and Demand Assessment and/or a potential water shortage declaration will be noticed per normal Board meeting public notification procedures. The meeting will also be announced through regular press release protocols.

Once a shortage stage has been declared by the Board of Directors, NID will notify its customers and others through a range of efforts. The stage and restrictions will be identified in a press release, as well as customer billing statements. The District's website will be updated to feature the shortage declaration, restrictions, and resources available to customers from the District and other entities to help meet the restrictions. Subsequent Board of Directors meetings will include a review of the shortage condition, customer response results, and discussion and recommendations for potential modifications.

2.3.6 Compliance and Enforcement

NID was formed as an irrigation district under the California Water Code and therefore is granted the authority to enforce its rules and regulations, as well as levy and collect fines. NID will declare a water shortage emergency within its service area boundaries when it determines through its best judgement that normal demands and requirements of its customers cannot be met with the projected supplies.

Once a water shortage stage has been declared, NID will enforce compliance through a multitude of measures commensurate with each reduction goal. The District will either implement measures per this plan or will provide further discrete requirements through ordinances.

Measures will be enforced through the following procedures, in addition to any enforcement measures identified in ordinances. NID will modify and adjust the compliance strategy as necessary for each respective situation.

- A written warning will be issued for a first violation.
- A District imposed fine of $250 for a second violation, and any subsequent violation, and doubling with each subsequent violation up to a maximum of $1,000 for any single violation.
- Upon a fourth violation, or upon an earlier violation the General Manager determines to create a significant threat to the goals of the ordinance, the General Manager may order the installation of a flow restrictor on service lines in question.
- Similar penalties, fines and charges may be implemented by the District as needed to enforce the restrictions on specific prohibition water uses.

Upon declaration of a Stage 2 shortage, NID will appoint and convene the Drought Hardship Committee. The Drought Hardship Committee is an advisory body and shall consist of one appointee from each director's division and the Water and Hydroelectric Operations (WHO) Board Committee. District Operation's staff will work closely with the committee.

The Drought Hardship Committee's purpose is to review the applications and determine whether additional water can be provided to the applicant. Before any appeal for a variance can be heard by the Drought Hardship Committee, the customer must submit a Drought Hardship Application and provide proof the water is being used for commercial agricultural purposes.

For the purposes of this Plan, the definition of commercial agriculture is an agricultural producer engaged in a for profit operation with a minimum gross annual sales of $3,000 and a minimum capital investment of $15,000. Commercial agricultural producers file a Schedule F with the Internal Revenue Service for their farming or ranching operation.

Preference will be given to applicants with an economic hardship and/or those utilizing best management practices and with efficient irrigation practices in place. Variances may be approved for increases in water deliveries, seasonal variances or other protocols as determined by the Drought Hardship Committee. No such variance or appeal, however, shall be granted if the Board of Directors finds that the variance or appeal will adversely affect the public health or safety of others and is not in the public's best interest.

Under the California Water Code, in critical water supply situations, there is a priority that shall be allocated as follows:

1. Human Consumption
2. Livestock and Animals
3. Perennial Crops
4. Annual Crops

Upon granting a Drought Hardship Variance or appeal, the Board may impose any other conditions it deems to be just and proper.

2.3.7 Financial Considerations for Drought Conditions

Implementing any stage of the drought plan is expected to impact the District's financial status. As experienced during previous droughts, it is expected that revenues will decrease with decreasing usage, and expenses will increase with additional monitoring and enforcement responsibilities, as well as additional costs for replacement supplies if needed.

The District maintains a rate structure that includes a fixed meter charge plus increasing volumetric block rates for residential customers and volumetric rates for irrigation customers. Volumetric revenue is approximately 53 percent of total revenue. The drought rate structure is set to offset revenue loss from mandatory demand reduction up to 40 percent. Demand reduction above 40 percent will reduce revenue accordingly. Actual impacts will vary depending on customer response.

Enforcement, enhanced outreach, and increase of customer data tracking can add to the District's costs around a water shortage condition. Often times, these additional efforts are prioritized for current staff, and other normal work efforts are delayed or reassigned. If conditions warrant, the District will seek assistance through additional staffing or third-party service providers. These costs depend on the level of support and will be evaluated on a case-by-case basis. Increase in costs can also be associated with additional equipment obtained to support the District's outreach, enforcement, tracking, and management efforts.

Depending on the situation, the District may also be able to obtain supplemental water supplies to mitigate the water shortage condition. These supplies are expected to be more costly than regular supplies, and will be evaluated for each specific opportunity.

It is reasonable to expect financial impacts or changes in cash flow during a prolonged water shortage condition. The District will enact a range of management and financial resources depending on the specific situation that include:

- Drought rate surcharge
- Utilizing financial reserves
- Capital project deferment
- Operational and maintenance expense deferment
- Increased revenue from penalties
- And others as identified

2.3.8 Monitoring, Reporting, and Refinement

The drought plan aims to ensure demands are reduced and/or supply is augmented to balance supply and demand. The District will enact various actions commensurate with each respective stage. The District will then monitor results to maintain the supply/demand balance. Similar to the supply and demand projections used to establish a shortage condition in the annual assessment procedure, the District will monitor the same data to determine effectiveness and efficacy. District staff will report to the Board of Directors at least monthly on status and results. Data reporting will include:

- Actual demands to projected demands per customer class and on total
- Actual supply availability and utilized to projected availability per each supply source
- Projected supply availability for next 12 months per supply source
- Any specific requirements identified by the State in the future

Data will also be submitted to the State per any future reporting requirements.

Progress and efficacy will be summarized from the results data. The District will evaluate the need for any changes or modifications to the declared water shortage stage or actions based on the results. The District may determine to enact additional measures, develop ordinances, or update the drought plan as a whole. Any drought plan update or modification will be conducted through the Board of Directors meeting process, unless specific conditions require otherwise.

3 Description of Quantity of Water Uses

10826(b). Describe the quantity and quality of water resources of the agricultural water supplier, including all of the following:
(1)-(4) not shown here
(5) Water uses within the agricultural water supplier's service area, including all of the following:
(A) Agricultural
(B) Environmental
(C) Recreational
(D) Municipal and industrial
(E) Groundwater recharge, including estimated flows from deep percolation from irrigation and seepage

Water uses within the District's service area are agricultural, environmental, recreational, and municipal. The District does not use water for groundwater recharge. The District is currently not participating in any transfers and/or exchanges, but has in the past.

3.1 Agricultural Water Use

The District's agricultural water deliveries for the planning period are presented in Table 3-1. The District characterizes agricultural sales as applied water that does not include precipitation and distribution losses. Table 3-1 presents the applied water measured by the District.

The District service area does not overlay a California Department of Water Resources-defined groundwater basin (except for the far southwestern section of the service area by Lincoln). Limited amounts of groundwater are available throughout the service area through fractured rock groundwater systems (CABY, 2020 and USGS, 1984). The District does not utilize groundwater as a supply source. The District does not monitor or track private groundwater usage. As stated in Chapter 5, the District will coordinate with the counties in future to better understand private groundwater use.

Table 3-1. (DWR Worksheet 20) Annual Agricultural Water Use, AF

Source	Planning Cycle				
	2016	2017	2018	2019	2020
Agricultural Water Supplier Delivered					
Surface Water[1]	110,356	109,476	109,343	107,439	109,016
Groundwater	0	0	0	0	0
Other (Define)					
Other Water Supplies Used					
Surface Water					
Groundwater					
Other (Define)					
Total	110,356	109,476	109,343	107,439	109,016

[1]Ordered amount.

There are multiple crops within the District's service area that vary due to topographical, geological, climatic, and soil condition differences. NID surveys its agriculture customers annually to inventory the type and approximate acreage of crops cultivated by their customers. NID checks the reported value against past reports, but does not verify and validate every report. The customer-provided crop data is

tabulated into Crop Reports. Information from the reports is provided to the California State Water Resources Control Board with the District's annual water rights filings.

The District currently does not collect or maintain detailed independent cropping information. The District relies on the self-reported surveys provided by customers. The District also does not collect or maintain detailed parcel-level soil information, irrigation system information, or specific agronomic water requirements for individual customers. As such, the District uses the types of crops and acreages in the self-reported survey to estimate water use components (for example, evapotranspiration (ET)) in the water budget calculation as described in Chapter 5.

Data from the crop reports are summarized in Table 3-2 for 2016-2020. The largest crops by acreage for 2020 are irrigated pasture and family gardens/orchards (61 and 20 percent, respectively). Many of the District's irrigation customers have ten acres or less of irrigated land. Table 3-2 lists the year 2020 total inches sold as reported on the customer survey. The customer survey values, including actual crop types and acreage, are not verified by NID. Water sold cannot be used to calculate crop duty factor as they do not represent each individual user's irrigation patterns, strategies, or actual application. NID acknowledges the customer-supplied data is not verified, and is proposing to enhance the data collection and refinement process as described in the management objectives in Section 5.3.

Table 3-2. (DWR Worksheet 21) Agricultural Crop Data for 2016-2020, acres

Crop	Irrigated Acres					2020 Miners Inch Sold[2]
	2016	2017	2018	2019	2020	
Cereals - Corn	22	32	32	33	34	12.47
Cereals - Rice	157	157	154	96	97	5.69
Cereals - Wheat	2	2	2	2	2	0.49
Cereals - Other	29	29	29	29	30	12.99
Forage - Alfalfa Hay	116	134	134	155	155	43.37
Forage - Hay Other	824	808	802	853	826	227.92
Forage - Irrigated Pasture	18,867	19,309	19,419	19,702	19,727	7,043.42
Forage - Silage	9	9	9	9	19	4.54
Forage - Other	59	189	190	190	192	19.46
Fruits - Apples	224	228	229	239	248	90.15
Fruits - Berries - All	110	125	126	138	136	41.26
Fruits - Cherries	58	58	55	56	54	14.73
Fruits - Citrus - All	151	171	161	166	182	52.46
Fruits - Grapes - Table	56	54	50	52	54	16.56
Fruits - Grapes - Other	627	631	642	669	661	162.6
Fruits - Kiwi	23	24	24	21	21	11.39
Fruits - Peaches	100	103	105	112	118	39.47
Fruits - Pears	121	139	131	128	134	39.39
Fruits - Plums	140	142	144	148	160	49.79
Fruits - Other	112	114	229	208	218	70.87

Crop	Irrigated Acres					2020 Miners Inch Sold[2]
	2016	2017	2018	2019	2020	
Fruits - Persimmons	3	3	2	2	2	0.73
Fruits - Apricots	1	1	1	1	1	0.23
Nursery	383	371	378	376	348	206.46
Cannabis	N/A	13	13	14	12	2.42
Nuts	171	193	194	196	203	34.53
Nuts - Walnuts	15	15	14	12	8	1.92
Nuts - Chestnuts	15	15	12	12	12	6.8
Nuts - Pistachios	1	1	1	1	1	0.62
Nuts - Almonds	13	13	13	13	13	4.36
Other	754	743	722	729	731	62.63
Golf Course	984	984	984	986	986	674.50
Other - Parks	152	152	221	224	224	47.42
Other - Exempt	0	0	0	0	0	0
Family Garden, Orchard, YD.	6,026	6,146	6,174	6,244	6,409	3,073.60
No Report .5MI / A	304	361	444	398	307	153.39
Pond	11	11	11	11	12	52.54
Total Irrigated Acres[1]	30,629	31,470	31,835	32,205	32,323	12,306

[1] Totals may not add due to rounding. Data from NID agricultural customer survey

[2] Water sold cannot be used to calculate crop duty factor as they do not represent each individual user's irrigation patterns, strategies, or actual application

3.2 Environmental Water Use

A portion of the District's water is utilized for environmental purposes, which includes non-recoverable in-stream flows and environmental water sales to other agencies such as the CDFW for the Spenceville Wildlife Area. The non-recoverable in-stream flows are located in the Middle Yuba River below Milton Diversion, Canyon Creek below Bowman Reservoir, and the Bear River below Combie Reservoir. Under the 1963 California Department of Fish and Game (now known as California Department of Fish and Wildlife, or CDFW) Agreement, the Yuba-Bear FERC License, and from terms in water right permits and licenses, the District releases water to maintain environmental conditions in creeks and rivers downstream of District facilities. The total amount for non-recoverable instream flow and environmental water use for the period 2016 through 2020 is shown in Table 3-3. The values reported for streams in Table 3-3 are estimated values for 2016 through 2020. As a matter of conservative operational strategy, NID releases more environmental water than required to ensure flows remain above the minimum permit requirements. Future environmental flows due to pending federal and state regulatory requirements will be different (HDR, 2020).

Table 3-3. (DWR Worksheet 24) Environmental Water Use, AF

Environmental Resource	Water Use, Acre-feet				
	2016	2017	2018	2019	2020
Vernal Pools					
Streams	9,410	9,410	9,410	9,410	9,410
CDFW Purchase	1,270	1,270	1,270	1,270	1,270
Lakes or Reservoirs					
Riparian Vegetation					
Ponds					
Total	10,680	10,680	10,680	10,680	10,680

3.3 Recreational Water Use

The District owns and operates reservoirs in the Yuba and Bear River watersheds, which also provide recreational opportunities in addition to functioning as storage reservoirs. In the Mountain Division, the District owns and operates campgrounds at Faucherie, Bowman, and Jackson Meadows reservoirs. The Mountain Division campgrounds are normally snowed in during the winter and opened for recreation from Memorial Day through Labor Day.

In the Lower Division in the Sierra foothills at both Rollins and Scotts Flat Lake reservoirs, camping, fishing, swimming, sunning, boating, water skiing, sailing, board sailing, and other activities are popular. Day use parks, campgrounds, and beaches are operated by the District and in some cases by private operators under contract with the District.

The District sells water to homeowner associations which utilize raw water for recreational lakes and golf courses such as Lake of the Pines, Dark Horse Golf Course, Lake Wildwood, Alta Sierra, Nevada County Country Club, as well as Auburn Recreation District sports fields, Turkey Creek Golf Course, and Lincoln Hills, Sun City. Table 3-4 summarizes the recreational water use for golf courses and parks.

Table 3-4. (DWR Worksheet 25) Recreational Water Use

Recreational Facility	Water Use, Acre-feet				
	2016	2017	2018	2019	2020
Golf Courses	6,920	6,881	6,879	6,121	6,121
Parks	373	373	376	430	430
Total	7,293	7,254	7,255	6,550	6,550

3.4 Groundwater Recharge Use

The majority of the District has no groundwater aquifer per California Department of Water Resources Bulletin 118 with the exception of a very small portion of the District's service area in Lincoln, which is on the eastern boundary of the Sacramento River Basin, North American Sub-Basin. The District does not utilize groundwater as an existing or planned source of water supply for agricultural customers or recharge due to limited groundwater availability. The District has no groundwater facilities. The District is aware that many private users utilize groundwater for domestic usage. However the District does not track private groundwater use at this time.

The Act requires an estimate of seepage and deep percolation to be presented in the AWMP. Estimating such values is extremely difficult in a fractured rock system ranging from shallow bedrock to deeper alluvium areas. Until more detailed data is collected, and more substrate information is known, NID is estimating seepage and percolation as the water loss detailed below.

3.5 Municipal and Industrial Water Use

The District has retail and wholesale municipal and industrial customers. The District sells both treated and raw wholesale water to the City of Grass Valley, Nevada City, Nevada City School of the Arts, Lake Vera Mutual, and Placer County Water Agency (PCWA). The water sold to PCWA is for use in NID's service area in the City of Lincoln. The total municipal water sales for 2016 through 2020 are provided in Table 3-5.

Table 3-5. (DWR Worksheet 26) Municipal/Industrial Water Use

Municipal/Industrial Entity	Water Use, Acre-feet				
	2016	2017	2018	2019	2020
NID Retail Customers - Treated Water	7,178	7,818	8,101	7,933	8,522
City of Grass Valley - Treated Water	19	38	33	1	50
Lake Vera Mutual Water Company - Treated Water	18	18	22	24	22
City of Grass Valley Broadview Heights - Treated Water	34	37	41	36	36
Total Treated (customer meters)	7,249	7,911	8,197	7,994	8,630
Total Treated (WTP inflow[1])	8,942	9,752	10,061	9,269	10,537
NID annual raw customers – Raw Water	3,527	3,538	3,395	3,262	3,309
City of Grass Valley - Raw Water	942	957	1,041	842	862
Nevada City - Raw Water	187	267	214	114	507
Nevada City School of Arts - Raw Water	5	5	6	7	5
Placer County Water Agency - Raw Water	571	1,349	1,430	1,188	1,517
Total Raw	5,232	6,116	6,086	5,413	6,200
Total Municipal/Industrial	14,174	15,868	16,147	14,682	16,737

[1] WTP inflow is total raw water to NID treatment plants

3.6 Water Loss

Water losses in the agricultural distribution system consist of evaporation and canal leakage, seepage, spillage, stock usage, construction water, and other unauthorized usages. NID has assumed a 15 percent loss in its previous Raw Water Master Plan and canal analysis efforts. This loss factor is applied to the total raw water diversions as an estimate of water loss in the canal system. Future improvements and enhancements in canal flow and customer purchase measurement will improve water loss estimation. The water loss estimate is summarized in Table 3-6.

Table 3-6. (DWR Worksheet 29) Other Water Uses

Water Use	Water Use, Acre-feet				
	2016	2017	2018	2019	2020
Total Canal Diversions	133,682	136,219	144,786	141,482	152,947
Loss Factor	15%	15%	15%	15%	15%
Water Loss - Distribution, seepage, evaporation, spills[1]	20,052	20,433	21,718	21,222	22,942

[1]15 percent loss applied to total diverted into canal system.

3.7 Total Water Use

Total water use is summarized in Table 3-7.

Table 3-7. Total Water Uses

Use	Water Use, Acre-feet				
	2016	2017	2018	2019	2020
Agricultural (ordered)	110,356	109,476	109,343	107,439	109,016
Environmental	10,680	10,680	10,680	10,680	10,680
Recreational	7,293	7,254	7,255	6,550	6,550
Municipal	14,174	15,868	16,147	14,682	16,737
Groundwater Recharge	0	0	0	0	0
Canal water loss to deep percolation and other unmeasured uses	20,052	20,433	21,718	21,222	22,942
Total:	162,555	163,711	165,143	160,573	165,925

4 Description of Quantity and Quality of Supplies

10826(b). Describe the quantity and quality of water resources of the agricultural water supplier, including all of the following:
(1) Surface water supply
(2) Groundwater supply
(3) Other water supplies
(4) Source water quality monitoring practices
(5) quote not shown here

This section describes the quantity and quality of water resources available to the District and includes a description of water quality monitoring programs.

4.1 Surface Water Supply

The District's primary source of supply is local surface water derived principally from the Yuba River, Bear River, and Deer Creek watersheds that is diverted and stored under the Districts pre-1914 and post-1914 appropriative water rights. The water rights allow for diversion and/or storage of approximately 450,000 AF per year (AFY). The District has an extensive system of storage reservoirs that provides surface water supply to the District's six water treatment plants as well as to the raw water customers. The District also maintains a contract with PG&E to purchase surface water that originates from the same supply sources as the District water rights supply.

4.1.1 Water Rights

The District was originally organized for the purpose of storing and delivering irrigation water to farmers and ranchers. In the early 1920's the District acquired storage and regulating facilities in the upper reaches of the Middle and South Yuba Rivers. In 1926, the District acquired most of its Canyon Creek holdings including the Bowman, Sawmill, French, and Faucherie Reservoirs. Associated water rights were also obtained. Deer Creek water rights were obtained in the 1920's for the development of Scott's Flat Reservoir. The District's surface water supply water rights are divided into two main categories:

- Watershed runoff
- Carryover storage in surface reservoirs

Watershed Runoff. This supply includes water rights to runoff from the District's watershed. Watershed runoff is the District's primary water supply. The amount of runoff and the manner in which it is used depends upon the amount of water contained in the snowpack and the rate at which the snowpack melts. District water rights include 22 pre-1914 rights acquired from mining interests, along with 28 post-1914 rights filed with the State of California to provide for domestic, municipal, industrial, recreational, power, and irrigation uses, and three riparian rights. These include rights for both consumptive and power purposes. The total water right volumes consist of storage rights, direct diversion rights, and some are a combination of both. The total quantity estimated for diversion and/or storage under current consumptive water rights totals approximately 450,000 AF on an annual basis.

The most prominent and obvious cause for the fluctuation in natural runoff is the variability in hydrologic conditions, as seen in the wide variations in annual rainfall/snowpack accumulations. Over the last 30 years runoff has fluctuated from less than 80,500 AF in a dry year (2015) to over 541,100 AF in wet years (2017). Average runoff from the Upper Division watershed, including the watershed area feeding Scotts Flat Reservoir, is approximately 232,600 AFY. Due to provisions in the PG&E Coordinated Operations Agreement, hydrologic variability, and the fact that the District is not the senior water right holder, the historical runoff data evaluated to estimate the District's average runoff supply does not include supplies from the Bear River and the South Yuba River. The District is likely to receive some water from the Bear

River and South Yuba River sources in dry years. Due to the uncertainty of the amount of supply available from these two sources, it has not been quantified in this AWMP. NID is investigating methods to track this water use in the future.

The system of storage reservoirs and conduits used to transport water to the District's service area boundary is referred to as the Upper Division. The Upper Division is operated in conjunction with PG&E under the terms of a joint agreement.

The District's Yuba-Bear Project's Federal Energy Regulatory Commission (FERC) license (No. 2266) expired in July 2013. The Project is presently undergoing relicensing. The current proposed license includes increased environmental flow requirements, which reduces supply available to meet customer demands.

Carryover Storage. The second largest component of District's supply is carryover storage, which is the volume of water left in storage reservoirs at the end of the irrigation season, usually at the end of September. The District's main storage reservoirs can contain a maximum of 280,085 AF of water. Per the District's Drought Contingency Plan, carryover storage should be held at a level not less than 78,000 AF. This includes a total 33,800 AF of minimum pool requirements reserved for environmental needs and dead storage volume (includes siltation estimates) that cannot be counted upon as a supply resulting in an available storage capacity of 202,085 AF. As with most reservoirs, the District's reservoirs are slowly being filled with sediment. The District is currently studying removal of this material.

The water supply is dependent on snowmelt and rain to fill storage reservoirs, and the District manages its system based on the timing of those events. While there is some natural runoff during normal summer months, the irrigation season (April 15–October 14) demand is met primarily with withdrawals from storage reservoirs. Careful management and operation of the storage reservoirs is required to capture the maximum amount of runoff, minimize spillage from the reservoirs, yet insure there is sufficient volume available in the reservoirs to accommodate runoff during the spring snow melt and storm events. Carryover storage is also affected by Winter/Fall customer demands. Winter/Fall effectively uses carryover storage, meaning less water could be available for the following irrigation season.

4.1.2 Contracted Purchases

The hydropower potential of its water led the District to enter into an agreement with PG&E in 1924 to use of a portion of the District's water through PG&E facilities. At the same time the District secured the option to purchase PG&E water to augment its own supply. Over the years, this agreement has been modified to meet the changing conditions and requirements of both organizations. In 1963, the District and PG&E agreed to develop additional storage capacity on both Middle Yuba and the Bear River. Additional water was also made available by improved and new facilities in the upper Yuba Basin.

The PG&E contract has recently been renewed. The maximum amount available for District purchase is 54,361 AF with reductions based on the Sacramento Valley Index (SVI).

4.1.3 Summary of Surface Water Supply Quantity

The District's use of each surface water supply over the past five years is summarized in Table 4-1. The District's watershed runoff water supply sources are covered by a combination of pre-1914 water rights, post 1914-water rights, and riparian water rights. In some California watersheds including the Sacramento River watershed, the recent drought has resulted in diversion curtailment orders being issued in 2014, 2015, and 2016 on water rights going back to a 1903 priority date. NID assumes the Governor's Office and the State will also attempt to impose restrictions in the future, regardless of water right priority. There are many other potential regulatory and legal restrictions that could affect the District's water supplies. The legislative and regulatory environment at the State level has been trending towards increased water usage restrictions recently, with increased focus on managing to a water budget limit, as well as efforts to increase instream flow values. The District views these efforts as having significant

impacts to its current supply and reliability assumptions, and could greatly restrict supplies the District is allowed to use. The precipitation from 2016-2020 as measured at the NID Bowman Lake precipitation gage is presented in Table 4-2. The District's surface water supplies are summarized in Table 4-3.

Table 4-1. (DWR Worksheet 30) Surface Water Supplies

Source Water Supply	Diversion Restriction	Supply, Acre-feet				
		2016	2017	2018	2019	2020
Contract Supply - PG&E	54,361	488	0	0	0	0
Watershed Runoff	450,000	261,300	541,100	189,600	343,700	119,500
Carryover Storage	280,085	104,300	151,000	159,900	146,700	170,000
Total[1]		366,088	450,000[2]	349,500	450,000[32]	289,500

[1] Total does not represent actual supply available due to temporal differences between runoff and water rights.

[2] Total limited to NID water rights upper limit of approximately 450,000 AFY.

Table 4-2. 2016-2020 Annual Precipitation – Bowman Lake Rain Gage

2016	2017	2018	2019	2020
96.6 in.	118.3 in.	61.0 in.	87.8 in.	37.7 in.

Table 4-3. (DWR Worksheet 31) Restrictions on Water Sources

Source	Restrictions	Name of Agency Imposing Restrictions	Operational Constraints
Contract Purchase (PG&E)	Climatic	PG&E	Flow and volume availability
Watershed Runoff	Legal, environmental, climatic	SWRCB, FERC, other State/ Federal Resource Agencies	Flow and volume availability, temporal availability,
Carryover Storage	Legal, environmental, climatic	District	Volume availability
Recycled Water	Legal, environmental	SWRCB	Treatment Capacity

4.2 Groundwater Supply

Most of the Sierra Nevada foothills located in the District's service area have a fractured rock groundwater system (CABY, 2020), including granitic and metavolcanic (USGS, 1984). NID views the fractured rock groundwater system as low yielding and unreliable for a District supply source. The District does not utilize groundwater as an existing or planned source of water supply or recharge due to limited groundwater availability. The majority of the District's service area has no groundwater aquifer

per California Department of Water Resources Bulletin 118 with the exception of the very small portion of the District's service area in Lincoln, which is on the eastern boundary of the Sacramento River Basin, North American Sub-Basin. The District has no groundwater facilities and does not use groundwater. NID is aware there are private wells in the area used for domestic purposes, but NID does not track private groundwater well inventory or use at this time.

4.3 Stormwater

The District currently has a policy to not divert stormwater runoff as presented in the current stormwater policy (District Policy #6655), provided in Appendix F.

4.4 Recycled Water

Wastewater collection, treatment, and discharge in the District's service area is the responsibility of Nevada City, Grass Valley, and Auburn. The District has no authority or control over wastewater management in the District's service area. The District understands that reuse is an important element of integrated water supply planning and is open to investigations with any of the wastewater utilities to support further development of a reuse supply component.

All wastewater treated within the District service area is discharged to local watercourses. Once discharged, the flow is available for appropriation. Recycled water discharge comingles with the District's water-right supply being transported in the creeks. The combined waters are then diverted from creeks into canals as described below. This supply of water augments the District's overall water supply.

Nevada City: The District utilizes effluent from the Nevada City wastewater treatment plant discharged into Deer Creek. The effluent is comingled with Deer Creek flows and diverted for reuse as agricultural irrigation water.

Grass Valley: The District utilizes effluent from the Grass Valley wastewater treatment plant discharged into Wolf Creek. The effluent is comingled with Wolf Creek flows and diverted for reuse as agricultural irrigation water.

City of Auburn: The District utilizes effluent from the Auburn wastewater treatment plant discharged into Auburn Ravine Creek. The effluent is comingled with Auburn Ravine Creek flows and diverted for reuse as agricultural irrigation water.

Table 4-4 lists the recycled water use from 2016-2020. Use is estimated based on the WWTP-provided effluent flows during the April 15-October 14 irrigation season. Quality and volume of wastewater effluent discharged is outside of the District's control. However, if effluent volumes were decreased, NID would need to adjust its operations to divert more supply into the affected canal system. There is a large impact if water quality is degraded and NID was unable to divert flows due to contamination. Each respective WWTP is regulated by the State through a discharge permit that addresses actions and requirements to maintain effluent water quality.

Table 4-4. (DWR Worksheet 30/31) Recycled Water Supplies

Source	Restrictions/ Constraints	Supply, Acre-feet				
		2016	2017	2018	2019	2020
Recycled Water	Environmental/ treatment capacity	1,378	1,638	1,529	1,598	1,408
Total		1,378	1,638	1,529	1,598	1,408

Note: As reported to the SWRCB based on the irrigation system.

4.5 Drainage from Service Area

The District's agricultural irrigation system is different than typical valley-floor systems. The District's canals supply water to customers. For the most part, any drainage or runoff from customer's parcels are collected and transported downstream through the natural drainage system. The District does not operate or manage drainage canals. Often times the runoff in streams and creeks is re-diverted at a lower point, but NID does not measure runoff individually. NID does measure end-of-canal spillage at five locations where the water does leave the system once spilled. However, there are over 30 canal end spill points throughout the system as well as thousands of individual customer parcels, and therefore ability to measure all drainage is not available at this time.

Table 4-5 summarizes the total volume measured at the five end points leaving the system for the planning period.

Table 4-5. (DWR Worksheet 35) Drainage Discharge

Discharge Type	Discharge, Acre-feet				
	2016	2017	2018	2019	2020
Water Leaving Service Area	3,030	4,680	5,168	4,785	3,696
Total	3,030	4,680	5,168	4,785	3,696

4.6 Water Supply Quality

The District's source water quality and monitoring practices are described in the following subsections.

4.6.1 Surface Water Supply

The District identifies and monitors surface water quality through regular updates of the required Watershed Sanitary Survey. The most recent Survey was completed in 2017 and covers the District's watersheds (insert website reference address). The 2017 Watershed Sanitary Survey Update concludes:

- Areas in the upper watersheds are, in general, minimally impacted by current human activities. However, previous mining era activities have had an impact.
- Current and historic mining operations distributed over large areas in the watersheds have a combined high potential to impact raw water quality.
- During summer months, recreation in the upper watersheds, including body contact recreation, motorized recreation, camping and hiking, bring large numbers of visitors into the area. This increases the potential for source water contamination.
- Major highways, local access roads and railroads are located throughout the watersheds increasing the risks to source water quality.
- Various licensed pesticides and herbicides are used for weed control around the District's canals, however, during the maintenance period, the treatment plants are bypassed.
- Most canals are open; they receive untreated drainage from the uphill slopes and are not protected from vandalism or other sources of contamination.

Natural disasters can also impact water quality. The quality of water supplies can be dramatically affected by fire. Fire and storm damage to the District conveyance facilities may consist of the following elements:

- Damage to parts of canal intakes,
- Collapse or weakening of some sections of canal flumes,
- Erosion and sedimentation of, and landslides into, sections of the canals.

The above-listed damages can cause some temporary adverse water quality effects, and some short-term losses of the District's water supplies in extreme cases. Of greater concern to overall water quality are flood and precipitation related damage occurrences. These could cause longer term adverse water quality impacts such as excessive runoff and loading of surface contaminants (such as livestock manure, petroleum products, pesticides, and mineral wastes).

The District does not monitor runoff from pastureland or rangeland for pesticides in the watershed. The District has in the past monitored the raw water influent into its potable water treatment plants, which is representative of supply used for agricultural irrigation. A review of the treated water monitoring at the District's water treatment plants shows that there were no detections of the herbicides or pesticides tested for in the Yuba/Bear River water supply. Triclopyr (systemic, foliar herbicide) is not regulated in drinking water; therefore, there is no monitoring data available for this constituent in the treatment plant monitoring data (Starr Consulting et al., 2017). Annual ranges for raw water quality monitoring (coliform and E.coli) at the District's water treatment plant intakes is summarized in Table 4-6.

Table 4-6. (DWR Worksheet 36) Surface Water Supply Quality

Parameter	Units	2016		2017		2018		2019		2020	
		Min	Max	Min	Max	Min	Max	Min	Max	Min	Max
Coliform	MPN/100 ml	0	>2,419.2	11	14,136	3.1	19,863	6.3	24,196	0	5,475
E.coli	MPN/100 ml	0	1,986.3	0	1,732.9	0	9,804	0	6,488	0	613.1

Source: NID 2019 Consumer Confidence Reports

Table 4-7 lists the 303(d) listed water bodies in the watershed per the State Water Board 2016 listing. As expected from the region's mining history, mercury and copper constitute the majority of the listed pollutants.

Table 4-7. 303(d) Listed Water Bodies

Name	Pollutant
Combie Lake	Mercury
Coon Creek (from confluence of Orr and Dry Creeks to East Side Canal)	Ammonia as N, Total
Deer Creek (Above Scotts Flat to Confluence of Deer Creek, North and South Forks)	pH
Deer Creek (Deer Creek Reservoir to Lake Wildwood	Indicator Bacteria; Mercury; pH
Lake Wildwood	Mercury
Little Deer Creek	Mercury; pH
Rock Creek	pH
Rollins Reservoir	Mercury
Scotts Flat Reservoir	Mercury
South Fork Yuba River (Headwaters to Spaulding Lake)	Copper; pH
Squirrel Creek	Indicator Bacteria
Upper Bear River (Rollins Lake to Camp Far West Reservoir)	Mercury
Wolf Creek	Indicator Bacteria

4.6.2 Groundwater Supply Quality

The District does not utilize groundwater as an existing or planned source of water due to limited groundwater availability and no groundwater aquifer per California Department of Water Resources Bulletin 118. The District does not monitor groundwater quality.

4.6.3 Recycled Water Quality

All wastewater treated within the District service area is treated under the State discharge permit system. Wastewater treatment is the responsibility of each respective wastewater treatment agency, as NID does not provide wastewater services. Assuming the treatment agencies are meeting their permit requirements, the effluent water quality is sufficient to be comingled with NID's supplies in the respective creeks, and diverted for use in NID's agricultural irrigation system. NID maintains close coordination with each wastewater agency so that NID can be notified of any potential effluent water quality issues.

4.6.4 Drainage from Service Area Quality

Drainages near agricultural lands and at points above the Sacramento River Basin are monitored for water quality parameters by the local agricultural water coalitions under the Sacramento Valley Water Quality Coalition (SVWQC). SVWQC reports the water quality data and analysis directly to the Irrigated Lands Regulatory Program of the Region 5 Central Valley Regional Water Quality Control Board. The Placer/Nevada/South Sutter/North Sacramento (PNSSNS) Watershed Coalition is the local agricultural organization that monitors water quality as it relates to agricultural production and discharges in the District's service area. The District does not monitor the water quality of outflow from the service area as the SVWQC is the responsible reporting entity under the Irrigated Land Regulatory Program

4.7 Source Water Quality Monitoring Practices

The District uses the irrigation raw water supply to also supply its potable water treatment plants. In addition to regularly conducting treated water quality monitoring, the District also monitors source water for coliform and E.coli. As summarized in the 2017 Watershed Sanitary Survey, the source water quality is extremely good as the watershed is relatively remote and at low risk of extensive contamination. However, there are emergency events that could impact source water quality. NID does conduct site-specific monitoring in response to known contamination events.

The source water is regularly sampled as part of the Watershed Sanitary Survey. The 2017 Survey raw water monitoring program aimed at assessing the Yuba and Bear Rivers' source water quality (Starr Consulting et al., 2017). Source water quality samples were monitored at various locations and frequencies. Parameters included turbidity, E. coli, Total Organic Carbon (TOC), and daily temperature (limited to Loma Rica WTP). Table 4-8 presents the District's water quality monitoring practices.

Table 4-8 (DWR Worksheet 38) Water Quality Monitoring Practices

Water Source	Monitoring Location	Measurement/Monitoring method or practice	Frequency
Various throughout the watershed	Various throughout the watershed	Determined by the watershed sanitary survey monitoring program	The watershed sanitary survey is updated every 5 years
Determined by location of contamination incident	Determined by location of contamination incident	Determined by type of contamination incident	Determined per event
Lake Spaulding[1] (via Banner Cascade Pipeline)	Loma Rica WTP E. George WTP	Turbidity, E. coli, TOC, Temp.[2]	Quarterly, Monthly, Bi-Monthly, Daily[2]
Deer Creek [1] (downstream of Scotts Flat Reservoir)	Lake Wildwood WTP Smartsville WTP	Turbidity, E. coli, TOC	Quarterly, Monthly
Rollins Reservoir[1] (via Bear River Canal)	N. Auburn WTP	Turbidity, E. coli, TOC, Temp.	Quarterly, Monthly
Bear River[1] (downstream of Rollins Reservoir)	Lake of the Pines WTP	Turbidity, E. coli, TOC, Temp.	Quarterly, Monthly

[1]Watershed Sanitary Survey (Starr Consulting et al., 2017)

[2]Loma Rica WTP only

5 Water Budget

10826(c). Include an annual water budget based on the quantification of all inflow and outflow components for the service area of the agricultural water supplier. Components of inflow shall include surface inflow, groundwater pumping in the service area, and effective precipitation. Components of outflow shall include surface outflow, deep percolation, and evapotranspiration. An agricultural water supplier shall report the annual water budget on a water-year basis.

Information on the development of the District's water budget is presented in this section. For each component included in the annual water budget, a description on the quantification of each is provided. NID's Water Management Objectives are presented. An estimate of the quantification of efficiency for agriculture water is presented.

5.1 Quantifying Inflow Water Supplies

The water budget presented includes surface inflow, groundwater pumping, and effective precipitation. Each subsection below presents the development and assumptions for each inflow component.

5.1.1 Surface Water Inflow

Surface water inflow is the raw water supply diverted into the raw water canal system. The District measures each diversion point. The majority of the raw water is then served to irrigation customers. The District maintains the flow diversion volumes and submits annual reports to the California State Water Resources Control Board. The majority of the District's irrigation customers are served water through a service box with orifice based on the miner's inch. The District's canal operation strategy emphasizes maintaining constant head in the canals to maintain consistent flow rates through the delivery boxes. The volume of agricultural water delivered is calculated using the flow-rate (miner's inch) and delivery duration period. It is recognized orifice-based metered delivery systems are less accurate than other turbine or ultrasonic type metering systems to measure and quantify deliveries. Converting the agricultural farm gate delivery mechanism to a metering systems that utilizes enclosed, pressure pipe methods will be an extensive and costly process that NID has yet to implement. Surface water inflow to the District's canal system is presented in Table 5-1.

5.1.2 Groundwater Inflow

As indicated throughout this document, NID does not provide groundwater supply. There is no DWR Bulletin 118 identified groundwater basin, but there is a fractured rock groundwater system. This fractured groundwater system is utilized for low producing domestic wells in the service area (USGS, 1984). NID is not aware of any agricultural irrigation customers using groundwater for agricultural irrigation. For this analysis, it is assumed any groundwater that may be used for agricultural irrigation is negligible compared to the total raw water supplied, and therefore groundwater inflow is assumed as zero for the water balance.

Tracking and quantifying of fractured rock private well groundwater use would benefit NID's ability to manage its water resources and support its customers. However, groundwater wells are currently regulated at the county government level, not by NID. The District will investigate options to partner with each respective county in the service area to further enhance private well groundwater usage understanding.

5.1.3 Effective Precipitation

The Draft AWMP Guidebook defines effective precipitation (EP) as the estimate of the amount of precipitation consumed by the crop. "A Proposed Methodology for Quantifying the Efficiency of Agricultural Water Use: A report to the Legislature, pursuant to §10608.64 of the California Water Code,

May 8, 2012" presents detailed methods to calculate agricultural water use efficiency, including effective precipitation. Other models also exist including CalSIMETAW, CUP Plus, and SIMETAW. These detailed methodologies require significant field-specific inputs such as soil characteristics and depth, crop types, irrigation areas and strategies, root system characteristics, agronomic practices, micro and macro climate factors, field runoff, and others. While these models and methodologies would be beneficial for NID's use, the detailed input data required for the models is not yet available for the NID service area. Not only is effective precipitation challenging to model, it is also challenging to estimate due to the wide variances in topography, climatic conditions, cropping types, and agronomic practices within the District's service area.

The body of data regarding agricultural use consists of the self-reported cropping surveys that are limited to crop type and estimated acreage for the irrigation season (April 15 – October 14). There is no crop type or acreage data available for Fall/Winter deliveries. A methodology commensurate with the available data and data quality is used to estimate effective precipitation as described below.

The EP methodology employs the Food and Agricultural Organization's (FAO) estimation method which apportions a percentage of the total monthly rainfall as the EP (Brouwer and Heibloem, 1986). The method is used when information on rainfall reliability, topography, soil texture and structure, depth of root zone, and prevailing soil type is generally unknown (Brouwer and Heibloem, 1986), as is the case for much of the District's service area.

EP is estimated for water years 2016 -2020 using average precipitation data from four weather stations for each year; Auburn, Colfax, Grass Valley, and Nevada City. The monthly precipitation totals for each site are averaged into a monthly precipitation (National Oceanic and Atmospheric Administration – California Nevada River Forecast Center (https://www.cnrfc.noaa.gov/). Average precipitation is input into the FAO formula to estimate the EP, which is then multiplied by the irrigation season acreage and Fall/Winter estimated acreage area to estimate total EP in acre-feet. The calculations are presented in Appendix H and results are reported in Table 5-1. The estimated accuracy of this calculation is +/- 25 percent due to numerous assumptions included in the calculation.

5.2 Quantifying Service Area Outflows

The water budget presented includes crop consumptive use, outflow, and deep percolation. Each subsection below presents the development and assumptions for each outflow component.

5.2.1 Crop Consumptive Use (CCU)

The crop consumptive use of applied water (CCU) is estimated using specific crop evapotranspiration rates published by the Irrigation Training and Research Center, California Polytechnic State University, San Luis Obispo. Based on the geographical location, the District's service area is associated within Zone 13. The calculations are presented in Appendix H and results are presented in Table 5-2. The estimated accuracy of this calculation is +/- 25 percent due to numerous assumptions of crop acreage, consistent evapotranspiration rates, and crop types included in the calculation.

5.2.2 Surface Outflows

As presented in Section 4.2, drainage and outflow within the NID service area is not measured. NID does not maintain a drainage collection system and any surface runoff flows into the natural drainage waterways. The gravity canal delivery system is designed to spill at the end points in order to maintain proper water elevation on customer service boxes. Most of these spills are upstream of another NID diversion structure, and therefore assumed to be diverted back into the canal system. NID does measure canal spills at the end of the system, where spills then flow out of the service area. These measured spills are the estimated outflow volumes. Therefore the outflow volume does not include other drainage or

rainfall event drainage during the non-irrigation season. Estimated surface outflows are presented in Table 5-2.

5.2.3 Deep Percolation Outflows

The subsurface characteristics throughout the service area can vary from bedrock to shallow alluvium (USGS, 1984), creating varying conditions of direct runoff, percolation into rock fractures, and subsurface drainage to watercourses. The District does not measure or track agricultural field runoff, nor maintain detailed field subsurface conditions or irrigation practices for each customer, complicating development of irrigation percolation estimates.

As the purpose of quantifying percolation in this AWMP is to differentiate and identity water volumes necessary to serve irrigation water to meet irrigation requirements, the District includes canal seepage in this category. It is assumed the water lost from the canals due to seepage either percolates into fractured rock fissures or into nearby shallow alluvium, and is lost to the canal system. The District has estimated canal seepage in the Raw Water Master Plan at 15 percent of total canal flow. Estimated deep percolation outflows are presented in Table 5-2.

5.2.4 Municipal and Industrial (raw)

As indicated in Section 3.4, NID provides municipal and industrial raw water to other entities. The raw water deliveries from the canal system are presented in Table 3-6 and are quantified as an outflow in the water budget. The raw water is diverted by the District for subsequent delivery to the City of Grass Valley, Nevada City, Nevada City School of Arts, and Placer County Water Agency. Municipal and industrial raw water deliveries are included in Table 5-2.

5.2.5 Treated System

Portions of the raw water flows are diverted from the canal system into NID's water treatment plants. These diversions are metered at the treatment plant's raw water intake and are included as an outflow in the water budget. Raw water deliveries to the District WTPs are included in Table 5-2.

Table 5-1. Quantification of Service Area Inflows

Inflow Component	How Quantified?	2016 AFY	2017 AFY	2018 AFY	2019 AFY	2020 AFY
Effective Precipitation	Estimated	6,312	17,509	8,495	13,775	13,580
Water Supplier surface water diversions	Measured	133,682	136,219	144,786	141,482	152,947
Water supplier groundwater pumping	Measured	0	0	0	0	0
Private groundwater pumping	Estimated	0	0	0	0	0
Total:		139,994	153,728	153,281	155,257	166,527

Table 5-2. Quantification of Service Area Outflows

Outflow Component	How Quantified?	2016 AFY	2017 AFY	2018 AFY	2019 AFY	2020 AFY
Evapotranspiration (Crop Consumptive Use)	Estimated	95,015	88,226	98,501	90,051	104,240
Surface Outflows[1]	Measured	3,030	4,680	5,168	4,785	3,696
Deep Percolations	Estimated	20,052	20,433	21,718	21,222	22,123
M&I (raw)	Measured	5,232	6,116	6,086	5,413	6,200
Treated System	Measured	8,942	9,752	10,061	9,269	10,537
Total:		132,271	129,207	141,533	130,740	147,615

[1] For measured sites only.

5.3 Identify Water Management Objectives

10826(f). Identify water management objectives based on the water budget to improve water system efficiency or to meet other water management objectives. The agricultural water supplier shall identify, prioritize, and implement actions to reduce water loss, improve water system management, and meet other water management objectives identified in the plan.

The District is at the crossroads of a unique opportunity. Water management throughout the State of California is shifting, with urban, agricultural, environmental, and social interests all working to reimagine water resources management priorities and responsibilities. Being situated at in the headwaters of the watershed that supplies the majority of the state, NID's water resources are highly valuable to downstream interests throughout the state. As stated in the District's adopted Strategic Plan Goal #3, NID will develop and manage its resources in a self-determining manner that protects and provides local control of the water supply. NID is taking this opportunity in water management shifts to locally develop the vision and water resource needs for its community. Plan for Water is NID's ongoing effort to develop this community-focused vision and subsequent strategies for implementation. Plan for Water will identify the community's need for water resources within the context of community visioning. Alternative strategies and projects will be developed and compared to support an ongoing strategy and implementation plan for policy decisions, management enhancements, operational modifications, infrastructure requirements, and others as identified. The Plan will identify triggering points and re-analysis updates in order to maintain current and responsive to future scenarios.

The Plan for Water provides the overarching long-term strategy for the District. To support the strategy, the District will need enhanced data collection and data analytics to inform decision making and track implementation progress. There are also new or pending regulations that will require enhanced data analytics such as water budget assignment by State and FERC license monitoring requirements. The following lists efforts NID will implement in the near future to enhance its water management capabilities:

1. Continue to evaluate and implement as feasible options to increase understanding of agricultural irrigation customer water uses and field characteristics. Crop type and irrigation area currently self-

reported. NID will investigate means and methods to improve accuracy and validation of irrigation customer practices, including available aerial imagery

2. Continue to evaluate and implement as feasible options to increase measurement accuracy. NID irrigation customers are mostly served through the miner's inch orifice distribution box. NID will investigate methods to improve the measure accuracy and temporal patterns to better quantify individual customer use.

3. Continue to evaluate and implement as feasible options to increase canal water balance accuracy. NID will investigate options to increase flow measurement throughout its canal system to allow refined understanding of water in, water out, and seepage.

4. Investigate land use and latent water demands within the service area as part of the Plan for Water process. NID only serves a portion of the parcels within its service area. Many unserved parcels are either undeveloped or use private domestic groundwater wells. Should wells fail, or parcels be developed, NID would provide service. This latent demand needs better quantification in order to improve understanding of potential future demands.

5. Reduce water demands. NID will continue to implement its conservation programs and demand management measures for agricultural and treated water customers. NID will investigate new programs as identified and modify the conservation program offerings as selected. On the treated water side, DWR and the State Board will soon be enforcing water budgets for indoor use and landscape irrigation. NID will develop the necessary data analytics to support the management and water demand reporting requirements.

6. Resource Stewardship. NID will continue its watershed management program and practices. NID will investigate new programs as identified and modify the watershed program offerings as selected.

7. Modify water system in step with changing hydrology. The State of California is projecting hydrologic scenarios that portend warmer conditions resulting in less snowpack and more rain. NID's current system relies on the slow melting of the snowpack over the spring and summer to supply irrigation demands. If there is less snow and more rain in the future, NID will need to make operational, facility, or watershed changes to store more of the winter rainfall for use during the irrigation season. The District will continue its efforts to identify future potential changes and evaluate alternatives to address these climate impacts.

8. Fractured rock groundwater system investigations. NID will investigate options to partner with the respective counties in the service are to better understand private well groundwater use and trends to support water accounting and future demand needs.

5.4 Quantify the Efficiency of Agricultural Water Use

10826(h). Quantify the efficiency of agricultural water use within the service area of the agricultural water supplier using the appropriate method or methods from among the four water use efficiency quantification methods developed by the department in the May 8, 2012, report to the Legislature entitled "A Proposed Methodology for Quantifying the Efficiency of Agricultural Water Use." The agricultural water supplier shall account for all water uses, including crop water use, agronomic water use, environmental water use, and recoverable surface flows.

The quantification of the efficiency of the District's water agricultural water use employs Method 1 (Crop Consumptive Use Fraction) from DWR's report to the Legislature entitled, "A Proposed methodology for Quantifying the Efficiency of Agricultural Water Use" (DWR, 2012). Specifically, Method 1 compares the evapotranspiration of applied water (ETAW) with the total applied water (AW) for the reported irrigated acres during 2020. Values for AW are reported as the amount purchased by agricultural

customers, including Fall/Winter customers. Calculations are presented in Appendix H and results are presented in the following Table 5-3.

Table 5-3. (DWR Table D.1) Crop Consumptive Use Fraction (2020)

Evapotranspiration of Applied Water (ETAW)[1] AFY	Applied Water (AW)[2] AFY	Crop Consumptive Use Fraction No units
90,660	109,016	83%

[1]Equal to evapotranspiration (Table 5-2) minus effective precipitation (Table 5-1).

[2]From Table 3-1.

Both ETAW and AW are estimated. Accuracy of crop consumption ratio is unknown.

6 Climate Change

10826(d). Include an analysis, based on available information, of the effect of climate change on future water supplies.

Climate change is increasingly at the forefront of water resource management discussions. This District's snowpack-based supply and delivery strategy could be extensively impacted by changing temperatures and precipitation. As such, the District undertook an analysis of climate change impacts to future supplies. The analysis included projecting future hydrologic conditions and their potential effect on the District's water supplies, specifically watershed runoff. The approach, State and Global Climate Model (GCM) datasets incorporated, assumptions, and results of the analysis are documented in the technical memorandum titled, "Hydrologic Analysis Technical Memorandum – Final Report" (HDR, 2020).

6.1 Climate Change Modeling Results

The modeling and analysis produced hydrologic data sets that represent historic and projected climate change condition for the year 2070 that can be used to quantify how much of the projected watershed runoff is available to be used as District water supply.

Table 6-1 presents the projected 2070 runoff values at four locations in the District's watershed under the various climate scenarios compared to the historical average runoff at each location. Results from the modeling and analysis indicated that changes in runoff volume are not directly proportional to changes in precipitation volume between scenarios. Variation of temperature, rainfall intensity, and rainfall duration impact the projected runoff. The detailed monthly model results also indicated a shifting of runoff to earlier in the year, as is expected with predicted warmer temperatures.

Table 6-1. Percent of Average Annual Historic Runoff

Location	Percent of Average Annual Historical Runoff at Each Location		
	2070 DEW	2070 Median	2070 WMW
Middle Yuba River at Milton Diversion Dam	92%	104%	126%
Canyon Creek at Bowman Dam	92%	104%	125%
Bear River at Rollins Dam	90%	109%	148%
Deer Creek at Scotts Flat Dam	90%	108%	147%

DEW - Drier, extreme warming scenario
WMW - Wetter, moderate warming scenario

The analysis also evaluated runoff projections under drought condition. A five-year historic drought (1987-1991) was input into the hydrology, with results presented in Table 6-2. Note the projected runoff values are solely based on the hydrologic characteristics of the five-year drought selected, and a different five-year period will result in different results. Results indicate the watershed is significantly impacted in this drought condition, with runoff reducing up to 75 percent in the early drought period, and 50 percent in later drought period. The average year 2070 runoff projected in the hydrologic model (383,500 AF) includes additional subbasins that are not included in the Upper Division dataset that lists an average historical runoff of 232,600 AFY in Section 4.1.1.

Table 6-2. Projected Watershed Runoff during Historical Five-Year Drought (1987-1991)

2070 Projected Average Year Runoff, AF	Drought Year 1, AF	Drought Year 2, AF	Drought Year 3 AF	Drought Year 4, AF	Drought Year 5, AF
383,500	97,200	95,200	315,900	158,200	166,700

The annual precipitation as measured at the NID Bowman Lake rain gage from 1987 through 1991 is presented in Table 6-3.

Table 6-3. 1987-1991 Annual Precipitation - Bowman Lake Rain Gage

1987	1988	1989	1990	1991
45.5 in.	49.1 in.	62.4 in.	44.8 in.	54.0 in.

6.2 Climate Change Impacts

The modeling results indicate NID should expect changes to the existing runoff patterns. In addition to NID's own supply and demand impacts, climate change could also affect NID with respect to state-wide needs and local agriculture.

As evidenced by the modeling results, runoff will be affected under the modeled climate conditions. However, the State's water management strategies also rely heavily on snowpack. It is expected similar changes will affect state-wide supplies and operations. Resulting policies, regulations, and legal impacts could likely impact NID's supply availability for local use.

Local climate change impacts will likely affect current supply source options. There are approximately 52,000 parcels in the District's service area. Only approximately 25,000 receive NID treated or raw water. It is assumed the remaining 25,000 parcels are served by fractured rock wells or are undeveloped. A prolonged drought, or increased winter runoff could reduce the amount of water that percolates into the rock fractures, reducing the amount of fractured rock groundwater. This in turn could cause private wells to be insufficient for use. Failing wells will likely cause an increase in the NID customers and subsequent demands, as existing residences will need to connect to the water system. Some of these users may be too far from existing infrastructure making it potentially cost prohibitive to connect, however, the District does expect new customers in the "soft service areas", which are areas near existing infrastructure.

Local climate changes could also affect the community's long-standing agriculture presence. Changing temperatures and precipitation patterns could affect crop types and irrigation demands, open up higher elevations to plantings, affect crop yields, change agronomic practices, and others. Each of these will have an effect on NID supply requirements, operational strategies, and infrastructure requirements.

In addition to supply and demand issues, NID also expects impacts to its other responsibilities. Watershed impacts will affect forest management practices, implementation of the FERC license requirements, and increase catastrophic fire risk. Existing recreation opportunities may be altered or not available under certain conditions. Hydropower generation, which provides significant revenue to the

District, may be shifted into less beneficial market pricing periods. Hydropower generation may also decrease as the normal high revenue summertime generation period may not have the water supply to generate as in the past.

Enhancing climate change resiliency is an important element for all levels of water resources planning across the state. The State is pursuing numerous avenues to quantify potential issues and develop mitigation alternatives. NID will follow these efforts and participate as available. Regionally, groups of agencies and other stakeholders are also addressing these issues and developing mitigation efforts, such as CABY, American River Basin Study, Association of California Water Agencies Headwaters initiatives, and others. Locally, NID is committed to controlling its own water resources in a self-determining manner per its strategic plan. The Plan for Water is NID's vehicle to assess climate change impacts and develop and implement mitigation strategies and modifications to operate within climate change.

7 Water Use Efficiency Information

10608.48(d). Agricultural water suppliers shall include in the agricultural water management plans required pursuant to Part 2.8 (commencing with Section 10800) a report on which efficient water management practices have been implemented and are planned to be implemented, an estimate of the water use efficiency improvements that have occurred since the last report, and an estimate of the water use efficiency improvements estimated to occur five and 10 years in the future. If an agricultural water supplier determines that an efficient water management practice is not locally cost effective or technically feasible, the supplier shall submit information documenting that determination.

The AWMP Act calls for agricultural water suppliers to report on which efficient water management practices (EWMP) they have implemented and plan to implement and to describe the associated water use efficiency improvements. The District's EWMP implementation is described in this section.

7.1 EWMP Implementation and Reporting

The following subsections report on the EWMPs planned, implemented, and improvements that have occurred since the 2015 AWMP. There are two Critical EWMPs that every supplier must implement. There are an additional 14 Conditionally Required EWMPs that should be implemented if cost effective or technically feasible.

7.1.1 Critical EWMPs

1 - Water Measurement - All of the District's customer delivery points are measured. Service outlets are checked numerous times per year for accuracy of water delivery. Orifice plates, screens and boards are replaced as necessary. All measurement structures are installed to professional engineering design standards. All structures are checked prior to irrigation season and numerous times during the season as necessary for accuracy by inspecting the levelness and to verify that the staff gages are set to the appropriate level. A standard AA current meter measurement is used to compute flow when necessary. In addition, locking of all irrigation boxes to prevent theft is currently being employed. Implementation of this EWMP is complete and NID will continue to maintain the measuring devices.

2 - Volume-Based Pricing - The District's water rates are shown in Appendix D. The uniform water rates are based in part on quantity delivered. The District approves water rates annually based on the cost of service, and consistent with Proposition 218. Implementation of this EWMP is complete, and rates structures are updated on a regular basis per Board direction.

7.1.2 Conditionally Required EWMPs

1 - Alternate Land Use - The District is not aware of customers with lands that have an exceptionally high water duty or whose irrigation contributes to significant problems. Some irrigation customers are required by the Central Valley Regional Water Quality Control Board to participate in a water coalition to protect water quality and minimize run-off through EWMPs. The District employs a water waste policy that prohibits excess runoff from a parcel. If a site is identified that is contributing to significant problems, the District will investigate solution options per the EWMP. Budget for implementation of this EWMP over the next 10 years is included in the regular budget for staff costs.

2 - Recycled Water Use - The District currently uses recycled water from urban wastewater treatment plants that is discharge to creeks per discharge permit requirements. The discharge is comingled with the District's water and diverted into the canal system. A total of 7,551 acre-feet of water supply was conserved from 2016 through 2020. Pending continued acceptable water quality, the District will continue to utilize recycled water for agricultural deliveries over the next 10 years. Budget for implementation of this EWMP over the next 10 years is included in the regular budget for staff costs.

3 - Finance On-Farm Irrigation Systems - This EWMP is not implemented as described in Section 7.4.

4 - Incentive Pricing Structure - The District currently has incentive pricing with volumetric uniform water rates that provide motivation to use water efficiently. The District's pricing consists of a combination of fixed charge (a constant fee assessed to customer) and a water rate (a price per unit of water delivered). The District's pricing structure promotes more efficient use of water at the farm level. Implementation of the EWMP is ongoing, with rates updated as determined by the Board. Budget for implementation of this EWMP over the next 10 years is included in the regular budget for staff costs.

5 - Infrastructure Improvements - The District lines and encases canal sections annually. The District also applies for grant funding when applicable. The benefit-cost ratio for this EWMP is low due to the cost per mile to gunite canals (a minimum of $125,000/mile). Even though some herbicide and soil erosion control costs may decrease by canal lining, cleaning silt and debris costs increase. In the last five years, the District has spent over $40 million on encasement and realignment of distribution lines and canals. Recent budgets have allocated over $1 million per year in raw water infrastructure and system improvements. Implementation of the EWMP is ongoing. Pending available funding, the District will continue to allocate $1 million annually for the next 10 years. Staff costs for capital projected implementation are included in the regular budget for staff costs.

6 - Order/Delivery Flexibility - The District's licensed distribution operators work with customers on an individual basis for canal rotations and delivery flexibility. In addition, the District allows for proration of account if service is impacted or for requested demand water. Implementation of the EWMP is ongoing and is expected to continue for the next 10 years. Staff costs for this practice are included in the regular budget for staff costs.

7 - Supplier Spill and Tailwater Systems - Tail water from higher elevation canals is recaptured in lower elevation canals due to the change in elevation of the extensive distribution system. The District has the right to resell return flows within the District boundaries. Therefore, this water is being recovered and utilized during the irrigation season. The District utilizes 15 automated gaging and telemetry stations within the canal system to increase efficiency and minimize spills. Implementation of the EWMP is ongoing. The District plans on increasing the measurement sites at non-recapturable end points, adding up to 10 sites over the next 10 years, assuming budget availability. The costs for these sites is included in the infrastructure improvement EWMP budget of $1 million per year.

8 - Conjunctive Use - Not applicable as only fractured rock groundwater is present in the service area.

9 - Automated Canal Controls - The District researched automation of canal structures, where applicable, for design, efficiency, and feasibility. Automatic gate control devices were installed at two of the District's large capacity canals. If feasible, the District will incorporate automation and/or telemetry into canal structures at the time of replacement. Implementation of the EWMP is ongoing. The District plans on installing up to 10 real-time monitoring stations over 10 years. The costs for these sites are included in the total infrastructure improvement EWMP budget of $1 million per year.

10 - Customer Pump Test/Evaluation - Not applicable. The District is not aware of any private groundwater customer wells used for irrigation.

11 - Water Conservation Coordinator - Since 2011, a full time water efficiency coordinator develops and coordinates educational programs, including fairs and events, irrigation workshops, customer surveys, newsletters, website information, demonstration gardens, and landowner site visits. The coordinator also provides customers with information on local cost-share and technical assistance programs. In addition, the District offers multiple programs including rebates, mulch giveaways, irrigation workshops, large landscape projects, and school presentations. Implementation of the EWMP is ongoing. Implementation

of this EWMP is complete and NID will continue to maintain the conservation coordination position and duties at a budget estimate of $100,000 per year for the next 10 years.

12 - Water Management Services to Customers - The District provides information and education to customers via the District's website (www.nidwater.com), inserts into the customer's bills, pamphlets and brochures, and an onsite Demonstration Garden. Throughout the year the District provides irrigation efficiency workshops that are free to customers, as well as free seminars and other events which promote water use efficiency through Best Management Practices. Further, the District responds to water waste reports and currently has a "Report Waste" link on their website. The District provides educational material and information on cost-share incentive programs that are offered by other agencies.

The District works closely with local and regional resources such as the USDA Natural Resource Conservation Service (NRCS) and Resource Conservation Districts (RCDs), University of California (UC) Cooperative Extension Farm Advisors, UC Certified Master Gardeners, and local county agricultural commissioners to provide customers with technical assistance and new advances in best management land practices, BMPs for herbicide use, conservation measures for environmental habitat, and the efficient use of water.

Implementation of the EWMP is ongoing and is expected to continue for the next 10 years. Staff costs for this practice are included in the regular budget for staff costs.

13 - Identify Institutional Changes - The District has riparian rights and pre- and post-1914 water rights for most of its water supply. The District's Board of Directors has the legal authority to directly set and implement policies that affect the distribution of water. The District evaluates its policies, rules, and regulations regularly to address regulatory and other changes. For the small portion of supply from the District's contract with PG&E, additional flexibility in timing and location of purchased water was incorporated into the recent PG&E agreement renewal.

Implementation of the EWMP is ongoing and is expected to continue for the next 10 years. Staff costs for this practice are included in the regular budget for staff costs.

14 - Supplier Pump Improved Efficiency - The District does not pump from groundwater and most of the distribution system is gravity flow. In a few isolated cases, 100-150 hp pumps lift water a short distance to a nearby reservoir. The pumps are inspected daily and any debris is removed. All pumps are inspected annually and are on an annual maintenance schedule to ensure efficient operations. The District replaces inefficient pumps as grant funding and/or budget is available. Implementation of this EWMP is ongoing. It is anticipated that the District will conduct two pump efficiency tests (and subsequent replacement based on available grant funding), during the next five and 10 years. Budget for testing is included in the regular operations budget, with identified replacement needs to be funded through budget and/or grants.

Table 7-1 presents the District's additional raw water system delivery improvements over the last five years.

Table 7-1. NID Raw Water System Infrastructure Efficiency Improvements (2015-2020)

Improvement	Location/List
New Gaging Stations	Riffle Box Canal at End Grove Canal at End Wolf Hanaman Canal at End Kyler Canal at Head Rock Creek Intertie Station Flow Meter for the DS Pumps
Replaced/Improved Gaging Stations	Red Dog Canal at Head Kilaga Springs Canal at Head Woodpecker Canal at Head Sazarac Canal at Head Oest Canal at Head Sanford Struckman H-Flume at Head Tarr at Hog Chute Gage Station Bowman Spaulding Canal at Head Allison Ranch at End
Telemetry – Real Time Data	Wilson Creek Diversion Ogee weir on Deer Creek DS Canal at Head Newtown Canal at Head Tunnel Canal at Head Tarr Canal at Head Chicago Park Canal at Head Loma Rica Reservoir Combie Phase I at Head Combie Ophir I at Head Gold Hill Canal at Head Camp Far West Canal at Head Auburn Ravine I Canal at Head Hemphill Canal at Head China Union Canal at Head
Canal Lining and Encasement	Bowman Spaulding Canal - 1,325 LF Chicago Park Canal – 280 LF Maben Canal Phase 1-3 – 5,320 LF Newtown Canal – 1,470 LF Combie Phase 1 – 8,900 LF
Canal Repairs	Shotcrete Canals - 7,700 Feet Encased canals (Due to leakage) – 18,740 Feet Repaired Canal leaks – 867 Repaired Reservoir Leaks – 3 (Alta Hill / Ruess 2 x's) Shotcrete Reservoirs – 1 (Ruess 2x's) Pipes Replaced (Over Shots / New Structures) – 220 Feet

Improvement	Location/List
	Berms Repaired (Downed Tree / Leaks / Up-Graded / Storm Damage) - 16, 050 Feet Repaired Control Structures – 2 (Gold Hill II - Head / Markwell – End)
Other Improvements	Installed Snowfox and monitoring equipment for real time snow data

Table 7-2 presents the District's schedule, finance plan, and budget to implement the EWMPs.

Table 7-2. (DWR Table VII.A.3) Schedule to Implement EWMPs

EWMP No.	Implementation Schedule	Finance Plan	Annual Budget Allotment
Critical 1 - Water Measurement	Completed	Rates	Included as part of larger operations budget
Critical 2 - Volume-Based Pricing	Ongoing/Completed	Rates	Included in various staff salaries budget allotment
1 – Facilitate alternative land use changes	Ongoing	Rates	Included in various staff salaries budget allotment
2 - Recycled Water Use	Ongoing	N/A	No cost for recycled water supply
4 - Incentive Pricing Structure	Ongoing	Rates	$50,000 (Proposition 218 process/education per rate case)
5 - Infrastructure Improvements	Ongoing	Rates	$1 million
6 - Order/Delivery Flexibility	Ongoing	Rates	Included as part of larger operations budget
7 - Supplier Spill and Tailwater Systems	Ongoing	Rates	Included in EWMP No. 5 budget allotment
9 - Automated Canal Controls	Ongoing	Rates	Included in EWMP No. 5 budget allotment
11 - Water Conservation Coordinator	Ongoing	Rates	$100,000
12 - Water Management Services to Customers	Ongoing	Rates	$50,000
13 - Identify Institutional Changes	Ongoing	Rates	Included in various staff salaries budget allotment
14 - Supplier Pump Improved Efficiency	Ongoing	Rates/Grants	Included as part of larger operations budget
Grand Total all EWMPs			$1.2 Million[1]

[1]Grand total budget allotment for implementation of EWMPs is over $1.2 million. Staff labor and regular operational budget are not quantified in this total.

7.2 Critical EWMPs

The District implements the mandatory Critical EWMPs: No. 1, Water Measurement, and No. 2, Incentive Pricing Structure. A description of how the critical EWMPs are implemented by the District is provided in Section 7.1. Additional background information is provided below.

7.2.1 Critical EWMP No. 1 – Water Measurement

All of the District's customer delivery points are measured. The majority of the District's irrigation customers purchase summer season water, April 15 through October 14; the typical duration of water delivery is 182 days. The standard measurement for a miner's inch requires a six-inch head of water over the center of the orifice and the water to free flow through the delivery point. For customers that purchase 40 miner's inches or less, the amount of water is delivered through a standard water box and measured through an orifice sized for the amount of water purchased and the available head pressure. For purchases greater than 40 miner's inches, the measurement may be by any industry standard device such as a weir or Parshall flume that will give the most accurate measurement for the situation. The customer's water boxes and orifice plates are checked at the beginning of irrigation season and periodically throughout the season for accuracy. Records are kept stating when customer services are turned on and off to assist in calculating the volume of water delivered. Volume is calculated as follows:

$$\text{Volume} = \text{Flow} \times \text{Duration}$$

Where,

Flow = miners inch delivered converted to flow rate based on orifice

Duration = Time of water service/delivery

7.2.2 Critical EWMP No. 2 – Incentive Pricing Structure

All water rates are determined on a cost of service basis, consistent with Proposition 218, and are reviewed annually. Raw water rates are a uniform volumetric charge, consisting of a combination of fixed charge (a constant fee assessed to customer) and a water rate (a price per unit of water delivered). Raw water is sold by quantity in increments of either miner's inches or acre feet. The District has several rate schedules for raw water depending on the type of service provided. Similar to the rates, the District also has several billing frequencies depending on the type of service. For a seasonal irrigation service, the customer has the choice of paying the amount in full or making payments in three installments. Most of the raw water customers purchase water for the summer irrigation season (April 15 to October 15). The current District water rates are provided in Appendix D.

7.3 Conditional EWMPs

The District continues to implement cost-effective or technically feasible conservation measures including, but not limited to, the practices described in Section 7.1. All of the applicable Conditional EWMPs are being implemented with the exception of No 3, On Farm Capital Improvements. Some irrigation customers are required by the Central Valley Regional Water Quality Control Board to participate in a water coalition to protect water quality and minimize run-off through efficient water management practices.

7.4 Documentation for Non-Implemented EWMPs

The efficient water management practices that the District has determined are not locally cost effective or technically feasible are listed in Table 7-3.

Table 7-3. (DWR Table VII.A.4) Non-Implemented EWMP Documentation

EWMP No.	Description	(check one or both)		Justification and/or Documentation
		Technically Infeasible	Not Locally Cost-Effective	
3	On-Farm Irrigation Capital Improvements		X	The District provides information and resources to customers for local, state and federal cost-share and technical assistance programs such as the USDA Natural Resource Conservation Service EQIP, local RCDs and UC Cooperative Extension Farm Advisors. It is not locally cost effective for the District to finance capital improvements to agricultural customers because due to the District's water rights and supply infrastructure fixed costs, there are no incremental cost savings from potential local on-farm capital improvements.

8 Supporting Documentation

The Agricultural Water Measurement Regulation applies to water suppliers that serve more than 25,000 acres (excluding recycled water), and requires that water measurements be conducted at the farm-gate of a single customer and that measurement devices are certified as accurate through field-testing, laboratory/engineer certification, or inspection. In this section the term "delivery point" is used in place of the term "farm-gate" to be consistent with the District's terminology for the location at which the District transfers control of the delivered water to the customer.

8.1 Legal Certification and Apportionment Required for Water Measurement

The District can measure water at the delivery point for all customers and therefore does not need to submit legal certification and apportionment required for water measurement. This DWR AWMP Guidebook Attachment A requirement is not applicable to the District. There are no legal constraints to installing or operating water meters for any of the District's customers.

8.2 Engineer Certification and Apportionment Required for Water Measurement

The District can measure water at the delivery point for all customers. Therefore, the District does not need to submit engineer certification and apportionment required for water measurement. This DWR AWMP Guidebook Attachment B requirement is not applicable to the District. There are no physical constraints at the delivery points that prevent the installation or operation of water meters for any of the District's customers.

8.3 Description of Water Management Best Professional Practices

This section provides a description of the Best Professional Practices about the collection of water measurement data, frequency of measurements, method for determining irrigated acres, and quality control and quality assurance procedures.

8.3.1 Water Measurement Data Collection

Water measurement data are collected based on orifice plate settings for the duration of the customers purchase, either seasonally (from April 15 to October 14) or annually. As needed and if requested, the District will review, test, and evaluate the measuring device and its ability to provide the water accurately to the customer. Appendix G contains a memorandum from the District's interim engineering manager stating that the District's current methods of measuring customer deliveries meets raw water measurement best management practices under California Code of Regulations Section 597.2.

8.3.2 Measurement Frequency

Each customer is provided an orifice size which continuously measures the amount and limits the maximum amount of water at specific conditions. The orifice size is set on a regular basis per the respective ordered water supply.

8.3.3 Method for Determining Irrigated Acres

The District sends out a Crop Acreage Report form annually for the customer to report the irrigated acreage and types of crops with the application for water. The type of information required to be provided by the customer is:

1. Crops grown and irrigated acreage by crop type
2. Total acreage

8.3.4 Quality Control/Assurance Procedures

Information provided by the customers on the Application for Water and Crop Acreage report form sent out annually by the District is cross-checked by the District against prior reports and the total amount of acreage owned. If necessary, the District contacts the customer for clarification of the data submitted and/or conducts a site visit.

8.4 Documentation of Water Measurement Conversion to Volume

The orifice measurement is based on the miners inch. The District makes every reasonable effort to set the orifice to the proper head and allow free flow through the orifice and assumes 1 miners inch equals 1.5 cubic feet per minute. The size of the orifice (defining quantity of miners inch) along with the delivery duration (in days) is used to convert the water measurement to volume. Duration is based on the customer order, which is usually for the entire irrigation season. In the event a customer requests a shutoff, turn on, or Fall/Winter delivery, these durations are factored into the duration total.

8.5 Device Corrective Action Plan Required for Water Measurement

Orifices used for customer delivery are checked at a minimum of twice a year for proper sizing, adequate head pressure, and condition of the service point. Flowmeters are included in a maintenance management program and are inspected annually and calibrated according to manufacturer recommendations.

Field checks on canal measuring stations occur three to four times per year. This continual verification allows the District to maintain proper and accurate measurement records (Teledyne, 2016 and USBR, rev. 2001). Open channel flow sites are inspected to ensure structures are plumb, staff gages are level with flume floors and weir crests, approach flows are laminar, and that no backwater conditions exist in the tailrace of the structures. Current meters are used as a secondary verification to confirm the volume of flow.

8.6 References

Brouwer, C. and Heibloem, M. *Irrigation Water Management: Irrigation Water Needs*. 1986.

Brown and Caldwell. *2015 Agricultural Water Management Plan*. January 2016.

CABY. *Integrated Regional Water Management Plan 2020 Update* [PUBLIC REVIEW DRAFT]. 2020.

California Department of Water Resources (DWR). *A Guidebook to Assist Agricultural Water Suppliers to Prepare a 2020 Agricultural Water Management Plan* [DRAFT]. August 2020.

California Department of Water Resources (DWR). *A Proposed Methodology for Quantifying the Efficiency of Agricultural Water Use*. May, 2012.

HDR. *Hydrologic Analysis Technical Memorandum – Final Report*. November 2020.

Starr Consulting and Palencia Consulting Engineers. *Yuba/Bear River Watershed Sanitary Survey, 2017 Update*. January 2017.

Teledyne ISCO Open Channel Flow Measurement Handbook, Eighth Edition (Teledyne). 2016.

United States Department of the Interior, Bureau of Reclamation (USBR). *Water Measurement Manual*. Revised 2001.

United States Geological Survey (USGS). *Ground-Water Conditions and Well Yields in Fractured Rocks, Southwestern Nevada County*. 1984.

Nevada Irrigation District

Agricultural Water Management Plan

Appendices

Draft Final
April 14, 2021

Appendix A: Public Outreach and Review

- Public Review Comments and NID Response
- City/County Notification
- Copy of Notice of Public Hearing

Nevada Irrigation District
Response to Public Comments to the
2020 Agricultural Water Management Plan

RESPONSE TO COMMENTS THAT DID NOT RAISE A SPECIFIC ISSUE WITH THE AGRICULTURAL WATER MANAGEMENT PLAN.

Nevada Irrigation District acknowledges and appreciates the time and thought that went into each comment letter submitted during the public review and comment period for the Agricultural Water Management Plan. All of the comment letters received for the draft AWMP have been incorporated into the public record for the AWMP, which will be considered when the Board of Directors deliberates regarding whether to approve the AWMP.

NID has provided unique responses to each comment that pertain to specific issues within the AWMP document. However, some comment letters do not comment on any of the specific analyses or provisions of the AWMP, nor do they pertain to the accuracy or adequacy of the document overall. NID is deferring responses to the more general observations contained in the comment letters listed below to a more appropriate forum, such as the Plan For Water review.

From: Keith Lorah
To: NID Info
Subject: Centennial Dam
Date: Monday, March 15, 2021 3:20:08 PM

I am in agreement with SYRCL about the proposed Centennial Dam. There statements read in part:

SYRCL has been concerned about recent data and modeling in NID's Water Planning Projections because they were incomplete and seemed to inflate demand. It is unclear to what extent the Water Planning Projections informed the AWMP.

SYRCL was disappointed that NID chose to cancel both the public meetings on March 3 and 4, 2021 at the last minute and instead defer discussion to a regularly scheduled Board Meeting this Wednesday, March 10, 2021, where less public engagement is possible due to a busy Board agenda and workday time.
SYRCL was also disappointed to see that NID is only accepting written public comment until March 16, 2021. This only gives the public two weeks to review and comment on the Plan, which is not enough time to fully understand what is in the Plan and meaningfully engage. Additionally, this comment deadline prevents inclusion on the formal record of any public comment made during the formal public hearing on March 24, 2021.

SYRCL believes NID should:

- Give the public additional time to review the Plan,
- Include comments in the final Plan from the March 24, 2021 Public Hearing, and
- Publish an explanation that states to what degree the Water Planning Projections were included in the Plan.

NID Response to:

Keith Lorah

The Water Planning Projections are a suite of technical memoranda that were published by NID in Summer, 2020. Public meetings were conducted to describe each respective memorandum and receive questions and comments. The hydrologic model is based on the FERC licensing approved model, with the updated model reviewed by State Department of Fish and Wildlife. In addition, extra climate change modeling runs were conducted as requested by public to include different drought assumptions. The NID website presents all the technical memorandum and additional modeling results, explanation of the planning projections, a glossary, frequently asked questions, and responses to the public's questions identified during the outreach process. The Water Planning Projections are the beginning of the Plan for Water process and there is continued opportunity for discussion and update of the planning assumptions during Plan for Water.

The AWMP reports past customer sales, other uses, and supplies, it does not project demands or supplies. AWMP statute (10826(d)) states "Include an analysis, based on available information, of the effect of climate change on future water supplies." The Water Planning Projections are NID's most current effort to identify the effect of climate change on future water supplies.

The draft AWMP was available on the NID website March 3, 2021. The Public Hearing was held March 24, 2021, providing at least 20 days for review. The comment incorrectly states that public comment during the Public Hearing is not included in the record. The March 16, 20201 deadline was for written comments to be included in the Board Agenda packet, which must be produced one week prior to the Board meeting.

Comments by Syd Brown
NID Agricultural Water Management Plan
Public Draft March 3, 2021

Page 7:

- Table 2-2. The column labeled "Effect on the Water Supplier" indicates that with the addition of an average of 20 new agricultural customers/year that the "increased demand must be met with the District's supplies". This mandate seems overly harsh. There should be no mandatory delivery for new agricultural customers. The availability of "excess" source water should be the driving force, not new demand.
- Last paragraph: "The system is supplied by diverting NID's surface water rights"….The system is supplied by water, not water rights.

Page 8

- Table 2-3: French Reservoir Capacity is shown as 13,940 AF. The 2015 AWMP lists French Reservoir capacity as 13,840 AF (page2-2). All other capacities are shown to be exactly the same from 2015 to 2020. Please provide an explanation of the discrepancy.
- Table 2-4 lists the Water Conveyance and Delivery System components. The table differs significantly from the corresponding table in NID's 2015 AWMP (Table 2-5, page 2-5). Please explain the discrepancies. The 2015 version total is 499 miles; the 2020 version totals 484 miles; 15 miles less. Please explain the discrepancy.

Page 11

- Table 2-7. The precipitation totals are essential, and the most recent measurements are 2016. Since 2017 was a record-breaking year, it should be included in the calculations.

Page 15

- Table 2-11, last column is mis-labeled. The measurement levels should be listed as 78-95% confidence level, or accuracy (the inverse of what is shown).

Page 16

- Last paragraph, line 4: "analyse" should be <u>analyze</u>

Page 17

- 1. Dry Year Projection …"at least 70 percent of normal precipitation". Need to define "normal precipitation". This is critical, since the total precipitation varies so widely. What "normal" is used in this context? Mean? Median? Mode?

Page 25

- 2.3.6 Compliance and Enforcement second paragraph, line 2 "commiserate" should be "<u>commensurate</u>"

Page 26

- 2.3.8 Monitoring, Reporting, and Refinement paragraph 1, line 2 "commiserate" should be "<u>commensurate</u>"

Page 28

- **3.1** Agricultural Water Use paragraph 2 "The District is not aware of any growers that may use private groundwater wells in addition to District-supplied water." This is difficult to believe. While that District may not monitor or capture this information, it seems that there may even be present and past board members (and many others) who may supplement their NID purchases with private wells.

Page 29

Table 3-2 Agricultural Crop Data for 2016-2020. The lion's share of purchased water is for irrigated pasture (19,727 acres out of a total of 32,323 total irrigated acres). It would be useful to display water use per crop, since the Water Code Section 10802 states: "The Legislature finds and declares that all of the following are the policies of the state:…(b) The efficient use of agricultural water supplies shall be an important criterion in public decisions with regard to water." Without data about quantities of water applied to irrigated pastures, and about commercial status of said irrigated pastures, it is impossible to determine whether the water is being put to efficient and beneficial use.

Page 30

- 3.2 second line: Spenceville, not Spencerville

Page 31

- The calculated golf course use equates to over 7' of water applied to every acre (986 acres, 6,120 AF). This number seems excessive.

Page 33

- Of note: The highest and lowest runoff years are only two years apart (2015 and 2017)!
- Second to last line: "focus on managing ~~for~~ water budgets as well~~s~~ as…"

Page 42

- Paragraph 4: +/-25% is a HUGE variation, yielding very shaky results
- 5.2.1 Crop Consumptive Use, second to last line: +/-25% is a HUGE variation, yielding very shaky results.

Page 44

- 5.3, paragraph 2, line 4: The following list**s** efforts…. (add "s" to list)

Page 47

- Table 6-1: Inconsistency with the column headed 2070 DEW. The table note shows **DEM** as Drier, extreme warming scenario. Should the note be **DEW**? If DEW is the correct heading, then the table of acronyms should be corrected, as well (page iii).

Page 49

- Recycled Water Use, line 3: "A total of 7,551 of water supply was conserved…" the number lacks units. Acre Feet?

NID Response to:

Syd Brown

Page 7

Table 2-2 (DWR Worksheet 3) presents NID's identification of future service area changes that could impact existing operations. NID currently provides service to all within the service area, providing connection fees and other costs. Comment presents an opinion on future NID service policy that is different than current policy.

"diverting water per…" added.

Page 8

Recent surveying was completed that resulted in a calculated capacity of 13,940 AF.

NID continually updates its GIS information. Overtime, infrastructure is re-categorized and/or updated as changes are made. The 2020 summary does not include private canals.

Page 11

A table listing annual precipitation has been added.

Page 15

Table headings are from previous DWR-provided tables. Heading has been changed to "Estimated Level of Accuracy, %". NID will use the DWR-provided tables for the submission to DWR.

Page 16

Editing correction made.

Page 17

The WSCP is defined by the updated UWMP statutes in the Water Code. The annual assessment procedures provide NID flexibility to adjust its determination of potential supply availability to address the specific conditions for each respective year. Assessment steps expanded to state 60 percent or precipitation at Bowman Lake Reporting Station.

Page 25

Editing correction made.

Page 26

Editing correction made.

Page 28

The sentence refers to the fact that the District does not have or maintain any records of groundwater use that could be used for data reporting. Sentence is deleted.

Page 29

2020 water orders are added to Table 3-2. The customer survey values, including actual crop types and acreage, are not verified by NID. The reader is cautioned that water orders cannot be used to calculate crop duty factor as they do not represent each individual user's irrigation patterns, strategies, or actual application.

Page 30
Editing correction made.

Page 31
Values reported according to NID data and reflect water ordered, not applied.

Page 33
"... to a water budget limit.." added.

Page 42
AWMP Section 5.3 recommends enhancing the data collected and accuracy for future water management efforts.

Page 44
Editing correction made.

Page 47
Editing correction made.

Page 49
Editing correction made.

FOOTHILLS WATER NETWORK

March 16, 2021

Greg Jones, Interim General Manager
Chris Bierwagen, Division II, President, Board of Directors
Ricki Heck, Division I, Board Member
Karen Hull, Division III, Board Member
Laura L. Peters, Division IV, Board Member
Richard Johansen, Division V, Board Member

Nevada Irrigation District
1036 West Main Street
Grass Valley, CA 95945

Re: Re-submittal of the Network's Comments on NID Water Planning Projections and Comments on the Agricultural Water Management Plan

Dear Directors Bierwagen, Heck, Hull, Johansen and Peters,

The Foothills Water Network (the Network) is a coalition of non-governmental organizations concerned with watershed management issues in the American, Bear, and Yuba River watersheds. The Network thanks Nevada Irrigation District (NID or the District) for holding two public meetings to allow the public additional time to understand the draft Agricultural Water Management Plan (AWMP).

Unfortunately, the Network was disappointed that NID did not release the draft Plan earlier for public review and chose to cancel the two public meetings on March 3 and 4, 2021 and instead hold a NID Board Workshop on March 10, 2021 during the regularly scheduled Board Meeting. The short comment deadline and sudden change in meeting frequency and time does not give the public adequate opportunity to comment or review the merits of the Plan before the Board is required to adopt the Plan. Additionally, NID did not contact the Network as requested in comments submitted in October 2020. Both the Network and the public need an explanation as to how much the October Water Planning Projections are included in the AWMP. Until NID provides such information, the Network re-submits the enclosed comments provided on NID's Water Planning Projections. Also attached are the Network's comments on NID's 2020 Update of the Agricultural Water Management Plan (AWMP).

The Network looks forward to engaging with NID in response to these comments and reviewing the draft Agricultural Water Management Plan with the intent to continue informing NID's future water planning efforts.

Respectfully submitted,

Foothills Water Network

_____

Traci Sheehan Van Thull
Coordinator, Foothills Water Network
PO Box 573
Coloma, CA 95613
traci@foothillswaternetwork.org

cc: Chris Shutes, California Sportfishing Protection Alliance
Ashley Overhouse, Policy Manager, South Yuba River Citizens League

Enclosures: The Network's Comments on NID's draft Agricultural Water Management Plan
The Network's Comments on NID's Water Planning Projections

FOOTHILLS WATER NETWORK

March 16, 2021

Greg Jones, Interim General Manager
Chris Bierwagen, Division II, President, Board of Directors
Ricki Heck, Division I, Board Member
Karen Hull, Division III, Board Member
Laura L. Peters, Division IV, Board Member
Richard Johansen, Division V, Board Member

Nevada Irrigation District
1036 West Main Street
Grass Valley, CA 95945

Re: Comments on the 2020 Update of the Agricultural Water Management Plan

Dear Directors Bierwagen, Heck, Hull, Johansen and Peters,

The Foothills Water Network (the Network) is a coalition of non-governmental organizations concerned with watershed management issues in the American, Bear, and Yuba River watersheds. The Network thanks Nevada Irrigation District (NID or the District) for holding two public meetings to allow the public additional time to understand the draft Agricultural Water Management Plan (Draft AWMP).

Below are the Network's comments on the NID's 2020 Update of the Agricultural Water Management Plan.

I. Introduction.

The AWMP is an important planning tool to help NID improve efficiencies and provide information and a record to the public on the District's stewardship of precious water resources in the Yuba and Bear River watersheds. Additionally, the AWMP and Urban Water Management Plan will inform the update to the Raw Water Master Plan, also known as "The Plan for Water", later this year. These Plans will guide NID in determining if our community needs additional water storage. Therefore, it is essential these Plans include thorough and accurate data and modeling so that the community can understand our present and future water needs.

Overall, the Network is still concerned about recent data and modeling in NID's Water Planning Projections because they were incomplete and seemed to inflate demand. It is still unclear to what extent the Water Planning Projections informed the Draft AWMP. Therefore, the Network's comments are organized in two parts: first, overarching comments about the Plan

itself, and second, a list of missing items from the Plan. The Network has also re-submitted its comments on the Water Planning Projections; see attached enclosure.

II. Nevada Irrigation District's water deliveries, rainfall, and climate change modeling.

NID should be commended on the consistent delivery of agricultural water each year. The average for 2016-2020 was 109,126 acre-ft (AF) (Draft AWMP, 2021; Table 3-1), with a standard deviation (SD) of only 1,065 AF, and thus a very low coefficient of variation (100*(SD/Average)) of 1.0. Each year's water deliveries were remarkably similar, indicating that NID's water provision was dependable regardless of precipitation. In fact, the average water deliveries in 2011-2014, a period of severe drought, were very similar as well, with an average of 110,857 AF, with a SD of 2,021 acre-ft, and a coefficient of variation of 2.0 (AWMP, 2015; Table 3-1, Page 3-2).

If the AWMP had a table with the total precipitation of each water year during the 2016-2020 period, then the variation between years would be clear. The only weather data currently shown are long-term average precipitation for four locations (Table 2-7). The effective precipitation, which is defined as the estimate of the amount of precipitation consumed by the crop (Draft AWMP, 2021; Page 41), suggests high variation in annual precipitation among the 2016-2020 water years (Table 5-1). Yet there was no apparent shortage of water for delivery, even between years that differed by more than 2 times in effective precipitation.

It is important to note that NID does not report actual water *deliveries*. The agricultural water deliveries in the AWMP report are the contracted amounts of water sold to customers. If NID's water was in short supply in drought years, then contracts would have been made for lower delivery of water. As the Draft AWMP shows, this reduction did not occur. It is interesting that water deliveries did not increase in the 2012-2015 drought period, suggesting that customers' needs were satisfied with the same amount of water that is delivered in wet years. This implies that water conservation may be a way to reduce overall water demand.

For the water shortage stages that require actions to reduce demand, the defined thresholds are based on the available water in storage facilities (Draft AWMP, 2021; Pages 19-24). The Draft AWMP does not mention any such water shortage incidents that may have occurred during the 2016-2020 period. Since none are currently described in the Draft AWMP, a logical conclusion is that even minor water shortages were avoided during this period.

Given the apparently robust water availability at present, a fundamental question arises regarding the climate change analysis that suggests major water shortages in the future. With five years of drought, NID's climate modelling shows that the watershed would become significantly impacted, "with runoff reducing up to 75 percent in the early drought period, and 50 percent in later drought period" (Draft AWMP, 2021; Table 6-2, Page 47). This is a much greater impact than actually occurred during the severe drought in 2011-2014 (AWMP, 2015), as discussed above. The methods for these projections are not described, nor are the assumptions of the modeling. **The Network recommends that NID add a table with the dates of the water years used in these projections, along with the total precipitation of each of these water years.**

Without this information, the reader is forced to conclude that the analysis itself is not presented appropriately or that there is a reason to cover up the methods and assumptions.

Additionally, the Network has the following questions about the Draft AWMP:

1. Why is there such a huge discrepancy between historical average annual runoff of 232,600 AF reported on page 33 of the Draft AWMP, and average annual runoff of 383,500 AF reported on page 68, Table 6-2, of the Draft AWMP, on the climate modeling?

   Text excerpt from page 33: "Over the last 30 years runoff has fluctuated from less than 80,500 AF in a dry year (2015) to over 541,100 AF in wet years (2017). Average runoff from the Upper Division watershed, including the watershed area feeding Scotts Flat Reservoir, is approximately *232,600 AFY*. Due to provisions in the PG&E Coordinated Operations Agreement, hydrologic variability, and the fact that the District is not the senior water right holder, the historical runoff data evaluated to estimate the District's average runoff supply does not include supplies from the Bear River and the South Yuba River" (emphasis added).
2. If the 383,500 AF average annual runoff is based on more sub-basins (68) than have been usually included in average runoff (59), which sub-basins are included in the 383,500 AF calculations, and which are included in the 232,600 AF calculations? Additionally, how many years, and which years, are included in those averages?
3. Alternatively, is the 383,500 AF average annual runoff average of modeled years for a period of time around 2070? If so, is it for 68 sub-basins or for 59 sub-basins?
4. Has NID conducted a literature review of the climate change in the Sierra Nevada, or on groundwater recharge potential in the Bear River Watershed, such as from current United States Geological Survey (USGS) reports? Is there any evidence for a lack of potential percolation geologically in this part of the watershed? Overall, the Draft AWMP lacks literature review, which is stipulated as one of the methods used for estimating water budgets in the California Department of Water Resources' (DWR) "*Handbook for Water Budget Development: With and Without Models*."[1]

III. List of missing information in the draft Agricultural Water Management Plan.

The list below identifies missing information and problematic statements in the Draft AWMP document, such as omissions related to the definition of terms, assumptions of models, and sources of information. While this is a partial list, it still highlights many important items that are missing. This list also demonstrates how difficult it is to understand the premise of calculations and modeling for water budgets, water use efficiency, and projections of future drought due to climate change.

This list is organized in page order for ease of reading and comprehension.

Page 10 of the Report

- The Draft AWMP does not provide information on the precipitation of each water year in the AWMP (2016-2020) on this page or anywhere else in the report. It is impossible to

[1] Draft Handbook available online here: https://water.ca.gov/-/media/DWR-Website/Web-Pages/Programs/Groundwater-Management/Data-and-Tools/Files/Water-Budget-Handbook.pdf

evaluate the water status of each year, and then compare it with annual agricultural water deliveries (as is shown in Table 3-1), without knowing the annual precipitation of each water year.

- Annual precipitation is a fundamental component of the water budgeting process in DWR's *Handbook for Water Budget Development*. The Network requests NID add a table with precipitation in each water year for the same locations as shown in Table 2-7.

Page 16 of the Report

- Section 2.3.1 on "Vulnerability to Drought" and 2.3.1 on "Resiliency Planning" consist of a few short paragraphs and bullets that do not give any specifics or any actual planning approaches. These are stated to be forthcoming in a future 'Plan for Water.'

Page 18 of the Report

- In Section 2.3.4 "Water Stages and Responses", no mention is made of any incidents when the water shortage thresholds were exceeded during the 5-year period of this AWMP, or any other period. The Network requests that NID clarify whether such incidents ever occurred and where they occurred.
- The Draft AWMP includes a new drought contingency plan that is being put into operation. It would be helpful to show this new set of water shortage thresholds along with the past drought criteria to be able to compare the frequency of water shortages through time.

Page 28 of the Report

- The Network requests NID emphasize that agricultural water deliveries are based on agricultural *sales*, and actual use is not measured in any way other than at the head of a canal and the setting of flow at the farm gate. The assumption is that all purchased water is applied water. In Section 3.1 on "Agricultural Water Use", several paragraphs are dedicated to the justification for not taking proactive steps to accurately assess the actual water used. Thus, calculations of water use efficiency and water budgets are of questionable value.

Page 32 of the Report

- In Section 3.6 on "Water Loss", NID assumes that 15% of the applied water is lost in the canal system. No justification for this loss factor is given, nor is a reference provided to explain why this factor is used.

Page 33 of the Report

- Water runoff is presented inconsistently in the document, with different values used in different sections. No explanation is given for the way the different values are calculated or modeled, or why the values differ across the AWMP document.
    - As an example, this statement is made on page 33: "Over the last 30 years runoff has fluctuated from less than 80,500 AF in a dry year (2015) to over 541,100 AF in wet years (2017). Average runoff from the Upper Division watershed, including the watershed area feeding Scotts Flat Reservoir, is approximately

232,600 AFY." Yet in Table 6-2 on Page 48, average annual runoff is given as **383,500 AFY**.

No information is given to explain the discrepancy in these values, nor is there an explanation for the sources of the data such as relevant sub-basins, which years, or how modeling was conducted.

Pages 34-35 of the Report

- The Draft AWMP does not provide any explanation or context for Table 4-1 on surface water supplies. It would be very useful to know how the carryover storage in the 2016-2020 period compares with other periods, especially the 2011-2015 period of severe drought. Also, how does water runoff during this 5-year period compare to average runoff historically?
- Moreover, no methodologies are mentioned for the calculation of variables shown in Table 4-1. DWR's *Handbook for Water Budget Development* describes several options for approaches, and it would be useful to know which ones were used. This would help to know the pitfalls or benefits involved.

Page 41 of the Report

- The description of the "Water Budget" in Section 5 of the Draft AWMP is severely deficient, because it mainly explains why it is impossible to deal with most of the components of a water budget. Additionally, no literature is cited on the water systems in the region. For example, no updated USGS reports on hydrology and groundwater are cited. Nor are reports from other water agencies in the area mentioned.

Page 42 of the Report

- Crop Consumptive Use (CCU) is very important for understanding crop water demand and water use efficiency, and yet the details of these calculations are missing. Is the CCU only calculated for the agricultural crops in Table 3-2? Or does it also include wetlands and other natural or managed ecosystems, which are prevalent in the NID Service Area?
- Apparently, for CCU, there were many assumptions that were not mentioned in this document. How were the crop coefficients determined for different crops and locations? Were the Browns Valley and Auburn California Irrigation Management Information System (CIMIS) stations used for crop coefficients? How were the crop coefficients determined for different crops and locations? Why is the estimated accuracy of the data +/- 25%?

Page 44 of the Report

- In Table 5-2, no explanation of the data on quantification of surface outflows is given in the text. Is the evapotranspiration considered to be a high proportion of agricultural water deliveries, or does it suggest that substantial water can be conserved? See comment on Table 5-3 (page 45) below.

Page 45 of the Report

- NID's water management objectives consist of a few short generic topics, with no prioritization and no explanation for specific improvements. Each topic consists of only

two or three lines of text. Instead of directly addressing the possibilities, NID claims that these issues will be developed in the future "Plan for Water." The Network recommends NID clarify that "The Plan for Water" is also the update process to the Raw Water Master Plan.

- In Table 5-3 on pages 45-46, NID considers that 83% of the water deliveries is beneficially used to support agricultural crops. Again, no explanation is given for this high-water use efficiency, as was discussed above.

Page 47 of the Report

- The single paragraph on climate change is inadequate to explain the methods and assumptions of the modeling done last year in a report entitled "*Hydrologic Analysis Technical Memorandum – Final Report*" (HDR, 2020). It is beyond the scope of this bulleted list to point out the many missing elements of the approach, assumptions, and interpretations. Please see the Network's comments on the Water Planning Projections for more detail.
- To depend on such a cursory description of the climate change approach is very difficult for stakeholders, who would benefit from understanding the modeling process.
- A literature review should be included to describe the results of the many studies on how climate change will affect the Sierra Nevada under different climate scenarios. Scientists from the University of California Los Angeles, University of California Merced, the USGS and other organizations have been actively researching this topic, and California's Fourth Climate Assessment provides an integrated analysis of this research as well.[2]
- For Table 6-1, again an explanation of the modeling approach is necessary. For how the runoff in 2070 will compare with average annual historical runoff, a key number is missing; there is no mention of the actual value for average annual historical runoff, or how it was determined. In comment 6, it has already been stated that there are different values for annual runoff within the document. What is the basis of the value used here?
- The Network recommends striking the sentence, "[r]esults indicate the watershed is significantly impacted in this drought condition, with runoff reducing up to 75 percent in the early drought period, and 50 percent in later drought period." Alternatively, provide a detailed explanation of the modeling approach and assumptions, along with how average runoff is calculated.

Page 48 of the Report

- The Network is particularly concerned with Table 6-2. There are serious omissions of information and a lack of explanation of assumptions on the projected watershed runoff during historical five-year drought. There is no mention of how average runoff was calculated, which years were used in the modeling, or the annual precipitation in these water years.
- Overall, the Network believes it is unacceptable to imply that severe drought is probable based on this cursory table and poorly described modeling exercise.

[2] California's Fourth Climate Change Assessment (2018); Climate Science Special Report: Fourth National Climate Assessment (NCA4), Volume I (2017). Available online: https://www.climateassessment.ca.gov/regions/

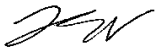
- No description of the geology is given for different parts of the District. The Draft AWMP states, "[a] prolonged drought, or increased winter runoff could reduce the amount of water that percolates into the rock fractures, reducing the amount of fractured rock groundwater." It also should be stated that other areas with alluvial sediments may increase in groundwater storage given higher runoff and less snowpack.
- Overall, groundwater is left out of most of the document or inconsistently referenced. Additional background information on hydrology, geology, and soils should be provided in the final AWMP, if these types of statements are to be included.

IV. Conclusion.

The Network looks forward to engaging with NID in response to these comments and reviewing the draft Agricultural Water Management Plan with the intent to continue informing NID's future water planning efforts.

Respectfully submitted,

Foothills Water Network



_____

Traci Sheehan Van Thull
Coordinator, Foothills Water Network
PO Box 573
Coloma, CA 95613
traci@foothillswaternetwork.org

FOOTHILLS WATER NETWORK

October 19, 2020

Greg Jones, Interim General Manager
Ricki Heck, Division I, President, Board of Directors
Chris Bierwagen, Division II, Board Member
Dr. Scott Miller, MD, Division III, Board Member
Laura L. Peters, Division IV, Board Member
Nick Wilcox, Division V, Board Member

Nevada Irrigation District
1036 West Main Street
Grass Valley, CA 95945

Submitted via e-mail: info@nidwater.com

Re: Water Planning Projection Documents

Dear Mr. Jones, President Heck, and Board Members,

The Foothills Water Network (the Network) is a coalition of non-governmental organizations[1] concerned with watershed management issues in the American, Bear, and Yuba River watersheds. The Network has been anticipating the release of the updated Nevada Irrigation District (NID) Hydrology and Hydraulics modeling or Water Planning Projections documents for many years and appreciates that NID has made them publicly available for review. These are important components for accurately updating NID's Agricultural Water Management Plan (AWMP) and Urban Water Management Plan (UWMP), both due in 2021[2] and for developing an important new requirement, a water budget. The Raw Water Master Plan (RWMP), also known as the Plan for Water, will ultimately need to reconcile the various plan perspectives and conclusions.

The Network thanks the NID Board for convening a webinar on September 24, 2020, which afforded an opportunity for HDR consultants to better explain the models and assumptions used to Network members and other stakeholders ("September 24 webinar"). After further

[1] Foothills Water Network, American Rivers, American Whitewater, California Outdoors, California Sportfishing Protection Alliance, Friends of the River, Gold Country Fly Fishers, Northern California Council of Fly Fishers International (formerly Northern California Council Federation of Fly Fishers), Sierra Club, South Yuba River Citizens League, and Trout Unlimited.
[2] *See* California Water Code, §§10610-10656, §10608 and new AWMP content requirements of AB 1668 (Friedman, Statute of 2018).

review of the Water Planning Projections documents and Appendices, and in consideration of the technical clarifications provided by HDR staff during the webinar, the Network presents the following comments and recommendations.

I. Overarching Comments

In April 2018, NID hit the pause button on efforts to develop its proposed Centennial Dam project and undertook an update of its Raw Water Master Plan (RWMP).[3] As the Network understood it, the underlying rationale for this was to evaluate the District's long-term water supply and needs before potentially embarking on an expensive and controversial new reservoir.

The Water Planning Projections documents and underlying technical work make some important strides in the evaluation of the District's long-term water supply and needs.

The update in the *Hydrologic Analysis Technical Memorandum (TM)* and supporting documents, whose purpose is to re-evaluate future hydrology in light of various climate change scenarios, generally makes sense and seems well supported. The decision to evaluate several scenarios makes sense, as does the decision to use the runoff projections from the median climate change scenario for most of the analysis.[4] The Network appreciates the even-handedness of using the median climate change scenario when performing analysis in other documents.

HDR's update to the ResSim operations model that NID and Pacific Gas & Electric Company (PG&E) developed in the Federal Energy Regulatory Commission (FERC) relicensing for NID's Yuba-Bear Hydroelectric Project[5] also makes sense. The update adds the Deer Creek system of NID's operation and the lower section of NID's Bear River system to complete the model of NID's water supply operations. These added portions of the model were not included in detail in relicensing. The new ResSim model will be a tool that adds technical precision and competence to multiple future evaluations by NID and stakeholders.

On the downside, NID reports the output from the new ResSim model only in the extremes: a very high-level summary in the *Water Supply Analysis Technical Memorandum (TM)* and extensive DSS-Vue files for actual model run output. More analytical tables, similar in scale to Appendix C for the *Hydrologic Analysis TM*, would be appropriate. The Network discusses this in greater detail below.

---

[3] The Foothills Water Network (FWN) is a broad coalition of more than a dozen local, state and national conservation groups that has challenged the proposed Centennial Dam since 2014. FWN is leading the formal regulatory process, commenting on what NID should study in its environmental review. FWN also filed a protest of the water rights application as did more than a dozen other organizations including the California Department of Fish and Wildlife (CDFW), U.S. Bureau of Reclamation, and South Sutter Water District.

[4] *Hydrologic Analysis Technical Memorandum (TM)*, p. 14. While the overall *TM* is generally supported, the Network would appreciate additional clarification as to why HDR only used the Cisco Grove gage at 5,000 ft elevation rather than incorporating readings from other gages at higher elevations, such as Jackson Meadows.

[5] The Federal Energy Regulatory Commission (FERC) hydroelectric relicensing process for NID's Yuba-Bear Hydroelectric Project No. 2266 ("relicensing") with all related federal, state and nongovernmental organizations is still ongoing as of October 19, 2020.

The new demand projections that NID has developed, as described in the *Water Demand Projection Model Update*, are less satisfactory. The Network considers this the heart of the planning exercise. Unfortunately, the "objective" stated at the top of page 8, "consistency with previous water planning assumptions, but incorporating new regulations and climate change impacts," does not appear to reflect a major change in the methodology of how the demand projection model translates land use projections into demand projections. In other words, the results in the *Water Demand Projection Model Update* do not actually produce an "update" for planning purposes. For example, if NID assumes a one percent per year increase in demand over the next fifty years, then NID is likely to need more water. This is a predictable outcome of the "previous water planning assumptions" that did not require a new water planning effort to determine. Alas, this is not an accurate assumption that can be utilized for planning purposes.

The *Water Supply Analysis TM* relies heavily on two tables: Table 2-1 and Table 3-1.

Water Supply Analysis TM Table 2-1 is confusing because it is presented in the context of carryover storage. This overlooks the fact that some of the instream flow requirements, particularly in December-June of wetter water years, will be met by water that is, or will be, runoff in rivers and streams. This is generally spill that could not be captured by NID anyway. The parties in relicensing, including NID,[6] that designed the new flow requirements accounted for this spill water, recognizing that higher flow requirements during periods of high runoff change the *timing* of spill but not the overall *quantity* of spill. In sum, Table 2-1 suggests that the amounts of water listed all come out of NID's storage and are reflected as decreases in carryover storage on a one-to-one basis. This is not true.

This misconception is one that has arisen several times over the past year. For example, during Agenda Item 9 of the NID Board Meeting on January 22, 2020, NID staff made a presentation to the Board that suggested that the flow requirements of the new FERC license would cause NID's end-of-year storage in wet years to be much less than storage in drier years. Staff made the mistake of simply subtracting the number of acre-feet of required flow (the same amounts shown in *Water Supply Analysis TM* Table 2-1) from end-of-year-storage.[7] However, again, the water needed to meet the instream flow requirements, particularly in Wet years, does not come exclusively from storage. Instream flows come in substantial part from spill or from water that NID chooses to release from storage for power generation knowing that it will fill its reservoirs later in the year. For further discussion and clarification, please see the comments of the California Department of Fish and Wildlife (CDFW) to NID's Water Planning Projections.

Water Supply Analysis TM Table 3-1 does not make best use of the tools that NID and HDR have developed. As clarified in the September 24 webinar, the data presented in Table 3-1 is not output from the ResSim model. Rather, the ResSim model was used only to calculate the starting carryover storage value for the year previous to the first year of the "projected 5-year

[6] NID negotiated in good faith for more than 10 years with State and Federal agencies, PG&E, neighboring water agencies, and the Network within the relicensing process for the Yuba-Bear Project to establish essential flows for all stakeholders, including NID customers and the environment. NID proposed the new flows in their Final License Application to FERC. Flows were negotiated and agreed to based on existing infrastructure.

[7] *See* https://nidwater.com/wp-content/uploads/2020/01/01222020_BOD_Item_9.pdf, slides 15 and 17.

drought water supply" that NID selected for analysis. As discussed during the webinar and below, the projected 5-year drought is problematic because it strings together the five worst water years in the period of record to analyze. But of perhaps even greater concern is that this does not allow use of the ResSim model. One of the consequences is that the calculated outcome appears to assume that all water for minimum instream flows comes out of storage.

Below, the Network discusses in greater detail our concerns with the *Water Demand Projection Model Update* and the *Water Supply Analysis TM* in particular. We also make recommendations to improve the analysis and its presentation in these documents and associated appendices.

II. Comments on the ResSim Model Runs Performed for the 2020 Water Planning Projections

In order to evaluate different elements of current and future water demand and supply, NID commissioned HDR to model several different scenarios with the revised ResSim operations model.

These simulations include:

1. Existing hydrology, existing flow requirements, existing NID demand.
2. Existing hydrology, Final Environmental Impact Statement (FEIS) projected future FERC flow requirements, existing NID demand.
3. Existing hydrology, FEIS projected future FERC flow requirements, projected 2060 NID demand.
4. Median climate change hydrology, FEIS projected future FERC flow requirements, projected 2060 NID demand.

Notably absent from these simulations is the following scenario:

5. Median climate change hydrology, FEIS projected future FERC flow requirements, *existing* NID demand.

This absent scenario is important because it would allow comparison of the relative impact on NID water supply operations of the new FERC flow requirements and projected demand increases under climate change hydrology. In an Opinion Editorial piece published September 13, 2020, NID Director Wilcox stated: "The largest single impact on carryover storage is, in fact, environmental flows and not increased consumption."[8] Existing modeling shows that this is clearly not the case under historical hydrology, and on its face we believe it is incorrect under climate change hydrology. However, without a model run that allows direct comparison of different demand requirements and the new FERC requirements under climate change hydrology, **there is no way to support this contention under future hydrology.**

[8] Nick Wilcox, *Our Community's Water Future*, Yubanet September 13, 2020. Available at: https://yubanet.com/regional/op-ed-nick-wilcox-our-communitys-water-future/.

The Network also notes that the California Department of Fish and Wildlife (CDFW) and South Yuba River Citizens League (SYRCL) Watershed Science staff reached different values for average carryover storage under each of the modeled scenarios than did HDR.[9] HDR and NID should endeavor to reconcile these discrepancies.

Requests and Recommendations:

1. The Network requests that NID commission HDR to run an additional model scenario (median climate change hydrology, FEIS projected future FERC flow requirements, *existing* NID demand) and provide the output in DSS-Vue format to allow direct comparison with the other scenarios.
2. The Network recommends presentation of additional tables and figures in an appendix to the *Water Supply Analysis TM* showing model inputs and output, in order to increase transparency and reduce the need to rely on a few aggregated summary numbers. The Network would be pleased to discuss specific data that would be particularly useful to include. In addition, the Network includes specific recommendations below regarding the presentation of additional data.
3. The Network recommends that HDR create a subset of data output for all modeled runs in DSS-Vue format and make these data available to stakeholders. The Network recommends discussions with CDFW and Network representatives to focus on the most useful output. Something on the order of 100 lines of output per run should help make the output more accessible to knowledgeable users.
4. The Network requests that NID schedule a webinar or phone call(s) with CDFW and the Network to talk through discrepancies in existing data output.

III. Comments on the *Water Demand Projection Model Update* and Recommendations

As discussed above, the *Water Demand Projection Model Update* does not take a fresh look at the calculation of increases in water supply for various projected changes in land use. The *Water Demand Projection Model Update* continues to extrapolate demand from "future, gross land area receiving water."[10]

It is unclear why NID assumes that there will be increases in gross land area receiving water. The *Water Demand Projection Model Update* describes projected changes in population in Placer and Nevada counties, but does not connect these changes with prospective increases in acreage receiving water. Indeed, the projection for Nevada County is for a decrease in population (Figure 3-3). For Placer County, Figure 3-3 shows an overall projected increase in population, but does not differentiate how much of this projected increase will occur in NID's service area. There is little persuasive evidence that these changes will contribute to an increase in NID's raw water demand. As pointed out during the September 24 webinar, the model predicts a 44% raw water demand increase in the Deer Creek System (Nevada County) by 2060

[9] *See* comments of CDFW.
[10] *Water Demand Projection Model Update*, p. 7.

and a 36% raw water increase in the Bear River System (largely in Placer County).[11] In aggregate, these projections are excessively high and not justified.

Projecting future raw water demand by examining incremental changes in land use has an inherent propensity for error because small degrees of overestimation compounded over forty years creates an overall large error. A reasonable way to ground-truth such seemingly inflated, acre-by-acre calculations is to review actual historical demand performance over extended periods of time. Several participants in the September 24 webinar raised this issue. HDR staff were reluctant to include recent demand trends in their analysis, however, observing that there had been both very wet years and drought years in the recent past. However, this may, in fact, be NID's 'new normal'.

The Network recommends NID include a longer dataset for its raw water demand in a revised memorandum, at least as long as the 2006-2017 time period that the *Water Demand Projection Model Update* provides for urban use.

Another way to produce more accurate water demand projections is to look at similar counties to observe their patterns of growth over the past two decades. El Dorado County, for example, passed an update to its General Plan in the early 2000's that anticipated substantial growth in both urban and raw water demand.[12] However, the recession of 2008 left El Dorado Irrigation District (EID) significantly overextended in its infrastructure construction program and associated financing, forcing large cutbacks in EID staff.[13] EID has subsequently restored equilibrium and revised its projected demand figures. In 2001, EID secured water rights permit 21112 to serve anticipated growth in El Dorado County. However, EID has not used almost any of the water available under this permit, and earlier in 2020 issued a Notice of Preparation for a petition to the State Water Resources Control Board to extend the time to put this permitted water to use.[14] NID can take a valuable lesson from the experience of El Dorado County and EID, which is similar in many ways to Nevada County.

During the September 24 webinar, HDR staff suggested unpredictable events are generally short-term. While this may have largely been true in the past, the era of climate change appears to be making it less true.[15] Large floods from atmospheric rivers (AR) and fires, for example, may affect the durability or productivity of acreage under cultivation for years after

[11] *Id.*, Tables 6-1 and 6-2.
[12] County of El Dorado Adopted General Plan. 2004. Available at: https://www.edcgov.us/Government/planning/generalplan/Documents/2004%20General%20Plan%20Adopted%207-19-04%20(original).pdf.
[13] Lamb, Celia. "Irrigation District Lays off 31 people." Sacramento Business Journal. December 9, 2008. Available at: https://www.bizjournals.com/sacramento/stories/2008/12/08/daily33.html.
[14] EID, Notice of Preparation of an Environmental Impact Report and Notice of Scoping Meeting for the Permit 21112 Project. Available at: https://www.eid.org/home/showdocument?id=13432. *See esp.* p. 7: "The District has been mindful of its ratepayers by making efficient use of its existing supplies to meet current demands. This responsible use of existing supplies has allowed EID to avoid premature investments in costly infrastructure that are not yet needed to meet current demands."
[15] Dhakal, N., S. Jain, A. Gray, M. Dandy, and E. Stancioff (2015), Nonstationarity in seasonality of extreme precipitation: A nonparametric circular statistical approach and its application, Water Resour. Res., 51, doi:10.1002/2014WR016399.

the actual event. Increases in ambient temperature may change the viability of various crops, including wine grapes. All of these factors are likely to change levels of risk for both urban and agricultural development in the NID service area. Among many other factors, increases in insurance premiums of all types will accompany increased risk, and insurance for some property may become unavailable. Whether those levels of risk will lead to decisions to reduce development is not known. However, it does call into question the apparent assumption that, since the last drought is behind us, the patterns of growth predicted in 2005 and 2011 remain reasonable predictions for the future.[16] The Network recommends that NID include in a revised memorandum discussion and evaluation of such potential landscape-level changes.

Additionally, the *Water Demand Projection Model Update* does not factor cost into predictions of future demand increases at all. It is extremely unlikely that NID will be able to continue to deliver raw water at the same relatively low cost as it has in the past. It is the Network's understanding that NID's financial reserves are low. Hydropower revenues are down.[17] Issuance of a new FERC license will increase NID's expenses substantially. HDR's predicted total cost for the license over fifty years is $212 million, with a single year cost of $22 million in the third year after license issuance.[18]

Nonetheless, the *Water Demand Projection Model Update* makes no evaluation of how changing costs for raw or treated water will influence future demand. The Network urges NID to revise the memorandum to evaluate and discuss this factor. It is reasonable to assume that an increase in cost could result in less demand.

The *Water Demand Projection Model Update* states that, as part of its development, HDR and NID recalculated actual usage of water in NID's system and trued-up current estimates for the number of acre-feet various local crops use per acre. There is value in improving accuracy on these calculations. Unfortunately, this misses the overarching issue of continuing to apply the assumption from 2005 and 2011 that there will be perpetually increasing raw water demand based on some kind of projected, but unsubstantiated, expansion of population, or increased agriculture or landscaping, or both.

The *Water Demand Projection Model Update* treats "Environmental Water" as a demand similar to raw and treated water deliveries and lumps them together under the category "total system demands."[19] This shorthand is confusing, for reasons stated above and below in the context of supply. The confusion is reproduced in the document *How NID Uses Water Planning Projections*: "Up to nearly 60,000 acre-feet per year *of NID's water supply* must be dedicated to flow requirements to enhance riparian and aquatic habitat for fish and other species and cannot

[16] *Water Demand Projection Model Update*, Figure 5-1, p. 9. This Figure supports the Network's comments that the demand increases are based on the old methodology founded on land use and cropping patterns. It additionally raises the question of how NID selected among the baseline, low and high projections for scenario planning.
[17] *See* e.g, Kathan, Jesse. "Decline in hydropower hampered by drought will impact utility costs." Mercury News. August 9, 2020. Available at: https://www.mercurynews.com/2020/08/09/decline-in-hydropower-hampered-by-drought-will-impact-utility-costs/.
[18] NID Board of Directors meeting July 8, 2020, Agenda Item 4 "Update on New FERC license." Available at: https://nidwater.com/wp-content/uploads/2020/07/07082020_BOD_Item_4.pdf.
[19] *Water Demand Projection Model Update*, pp. 27-28.

be used by NID to meet customer demand (up from 5,000 acre-feet per year from the previous license)."[20]

Requests and Recommendations:

1. The Network strongly recommends removing the "Environmental Flows" section, including Table 5-6, from the *Water Demand Projection Model Update*. Minimum instream flows, unlike consumptive demand, are met, in part, by uncaptured water. Conflating minimum instream flows with consumptive demand is inherently confusing and misleading.
2. Similarly, the Network recommends removal of minimum instream flows from Table 6-3 ("Total System Projected Demands"), limiting the table to Annual Consumptive Demands (currently labeled "Annual System Demand").
3. Throughout the water planning effort, the Network recommends replacing the term "environmental flows" with the more neutral term "unrecoverable minimum instream flows."
4. In order to accurately account for the water supply effects of new minimum instream flows, the Network recommends the following approach: for each of the four existing model runs and the fifth model run recommended above, include a table in an appendix that shows the year-by-year quantity of water in acre-feet that minimum instream flow requirements are actually delivered from storage. This table can also be used to complete the replacement for Table 3-1 in the *Water Supply Analysis TM*, as described below.
5. The Network requests that the *Water Demand Projection Model Update* add analysis of the effects of raw water pricing on raw water demand. If available, NID could start such analysis with the demand response to the largest recent raw water price increase within the District. Additional analysis could come from case studies, preferably from foothill counties in California.
6. The Network recommends addition of an appendix to the *Water Demand Projection Model Update* that analyzes projected and actual water demand in El Dorado County, as discussed above.
7. The Network recommends NID add a section or an appendix to the *Water Demand Projection Model Update* that analyzes the potential impacts of landscape-level changes that have a reasonable likelihood of affecting future water demand within the District. Broadly, these potential changes are likely to be related to climate change. They include, but are not limited to, floods, wildfire, and changes in crop suitability. The Network further recommends that this analysis include potential policy decisions that NID should consider in responding to the effects of such changes.
8. The Network recommends adding to the *Water Demand Projection Model Update* an analysis that accounts for the uncertainty of water demand increases within the District's service area in the next 40 years. This analysis should focus on comparison of two model runs, identified above as Run 4 (median climate change hydrology, FEIS projected future FERC flow requirements, projected 2060 NID demand) and

[20] *How NID Uses Water Planning Projections*, August 26, 2020. Available at: https://nidwater.com/2020/08/how-nid-uses-water-planning-projections/(emphasis added).

requested Run 5 (climate change hydrology, FEIS projected future FERC flow requirements, existing NID demand). This will bracket likely ranges of demand. It will also present the NID Board with the consequences of potential policy choices that encourage or discourage demand increases.

IV. Comments on the *Water Supply Analysis Technical Memorandum* and Recommendations

The *Water Supply Analysis TM* is built almost entirely around Table 3-1, titled "*Summary of 2070 5-Year Drought Water Supply*." This table is problematic in and of itself. It takes one hypothetical extreme drought as the only focus of analysis. As described above, it presents data that is calculated, not modeled.[21] It also does not provide a view of the overall effect over an extended period of the various elements it analyzes.

NID references the general guidance in California Executive Order B-37-16 (8) to justify the 5-Year Drought Planning analysis. To fulfill this requirement, NID evaluated the five driest years in the period of record and sequenced them in Table 3-1.[22] Neither the draft *Guidebook for 2020 Urban Water Management Plans*[23] nor the draft *2020 Agricultural Water Management Plan Guidebook*[24] require the methodology NID employed. On the contrary, California Water Code § 10612 requires that a drought plan be based on the "driest *five-year historic sequence* for the agency's water supply."[25] NID selected the individual five driest years (almost one from every decade) and calculated supply as if they were in sequence, rather than using a more realistic historic drought scenario for estimation.

The Network appreciates the recently published HDR memos showing alternative 5-year drought scenarios. However, the Network recommends that NID commission HDR to complete the model run described above (Median climate change hydrology, FEIS flow requirements, *existing* NID demand) and, together with the 4 runs HDR has already performed, present a series of tables built around the year-by-year output for the period of record. The tables should include the categories (outputs) shown in the existing Table 3-1. They should add a line that shows on an annual basis how much of the modeled required minimum instream flow comes from storage and how much comes from spill or discretionary power releases.

---

[21] NID used mass-balance calculations rather than a model such as Hec-ResSim. CDFW recommends NID use the Hec-ResSim model because "1) the tool has been vetted by many stakeholders, 2) the tool better accounts for natural system variability when assessing for drought impacts to water delivery potential, and 3) the tool allows for comparative analysis of relative impacts to reservoir carryover storage." *See* CDFW Comments.

[22] California Water Code § 10826.2, et sec.

[23] California Department of Water Resources. Urban Water Management Plan Guidebook 2020. Available at: https://water.ca.gov/Programs/Water-Use-And-Efficiency/Urban-Water-Use-Efficiency/Urban-WaterManagement-Plans.

[24] California Department of Water Resources. Agricultural Water Management Plan Guidebook 2020 (draft). Available at: https://water.ca.gov/News/Events/2020/Sept-20/Draft-2020-Agricultural-Water-Management-Plan-Guidebook-Virtual-Public-Meeting.

[25] California Water Code § 10612 (emphasis added).

The Network believes that modeled, rather than calculated, scenarios will provide a much more accurate view of the effects of each of the scenarios on NID's water supply operations. From each modeled scenario, the reader will be able to pick out the five-year sequence with the greatest shortages. Some technical discussion will be needed to decide how to incorporate NID's Drought Contingency Plan and any other water shortage policies into the ResSim model.[26]

Footnote 1 of Table 3-1 in the *Water Supply Analysis TM* refers to watershed runoff "per NID water rights." On clarification provided during the September 24 webinar, HDR staff explained that this meant that water available to PG&E was backed out of the calculation. This means that based on the calculations in the *Water Supply Analysis TM*, PG&E water for power generation would, in some cases, have priority over NID water supply. This particular prioritization does not make sense when considering regional water supply vulnerabilities to climate change.

A revised *Water Supply Analysis TM* should include analysis of the opportunity for NID to acquire the Lower Drum Hydroelectric Project and partially re-operate it to prioritize water supply over power generation. In addition, an update of the "red-blue" tool developed in relicensing that determines water available to PG&E (red) and to NID (blue) would enable a more granular analysis of how much water NID would have available for water supply in a modeled period of record. This would improve the transparency and accuracy of the calculated "watershed runoff" available to NID.

The Network thanks NID for attempting to diversify potential drought scenarios by releasing two additional technical memoranda from HDR on October 8, 2020. On brief review, the calculations in these memoranda seem to indicate that NID will generally have adequate water supply to meet water demands, even in a consecutive five-year drought. However, the new drought scenarios remain based on calculated outcomes, not the output of model runs. The Network's recommendations above regarding use of modeled data in preference to calculated data remain the same.

The Network recommends that NID develop additional analysis regarding climate change, wildfire and forest management. This would most likely fit best as an appendix to the *Hydrologic Analysis TM* and/or the *Water Supply Analysis TM*. Drought contingency is not the only new risk facing watersheds in the Sierra Nevada. NID's current collective water planning documents do not address uncertainties related to the potential damage to or failure of dams and conveyance infrastructure, the higher probability of atmospheric rivers (AR) and flooding, or the impacts of forest fires and forest management on watershed yield.

NID should consider the influence that reduced evapotranspiration from wildfire and forest management will have on runoff. Wildfire decreases tree density and evapotranspiration, while increasing soil moisture and runoff.[27] A study from the University of California Merced

[26] The two alternative drought scenario memorandums released by HDR during this comment period do not provide this technical discussion.

[27] Boisrame´, G., Thompson, S., Collins, B., & Stephens, S. (2017) Managed wildfire effects on forest resilience and water in the Sierra Nevada. *Ecosystems* (2017) 20: 717–732. DOI: 10.1007/s10021-016-0048-1.

(UC Merced) found that post-fire evapotranspiration decreased significantly for 5-20 years following wildfire in densely forested areas of the Yuba River and American River watersheds.[28] Forest management, already practiced to some degree by NID, decreases evapotranspiration in similar ways. UC Merced researchers estimate that improved forest management in large areas in the Yuba River and Bear River watersheds could increase runoff by 4 percent to 10 percent, depending on the extent and types of practices used.[29] The upper Yuba watershed has substantial storage of subsurface water that allows trees to tap into deep water during warm, dry periods in the summer[30] and facilitates recovery after wildfire. Continued forest management will reduce evapotranspiration and increase runoff.

NID should also consider the likelihood that mega-floods (like that of 1862) will become more frequent due to more atmospheric rivers (AR).[31] Runoff from these storm events could double, on average, in the latter half of this century.[32] Researchers from University of California Los Angeles (UCLA) warn: "…[H]ydroclimatic extremes may rise more rapidly than the gradual projected shift in regional mean precipitation."[33] And the "…increase in runoff during the most extreme AR events could present major flood control challenges for the region."[34] Analyzing and planning for these impacts is particularly important for NID's raw water customers and the agricultural sector in the Yuba and Bear River watersheds.

Requests and Recommendations

1. The Network recommends replacing the 5-year drought scenario that the *Water Supply Analysis TM* analyzes in Table 3-1 with the "five-consecutive driest years scenario" (Alternative 1) that NID developed in response to the September 24 webinar.[35] This will allow NID to use data derived from output from the HEC ResSim model, rather than calculated data, greatly increasing the accuracy, transparency, and utility of the memorandum.
2. The Network recommends that NID commission HDR to develop the data needed to re-create a table similar to Table 3-1 using data output from the model runs recommended above: Run 4 (median climate change hydrology, FEIS projected future FERC flow requirements, projected 2060 NID demand) and requested Run 5

[28] Roche, J.W., Ma, Q., Rungee, J., & Bales, R.C. (2020). Evapotranspiration mapping for forest management in California's Sierra Nevada. *Frontiers in Forests and Global Change*. Vol. 3. Available at: https://www.frontiersin.org/article/10.3389/ffgc.2020.00069, DOI=10.3389/ffgc.2020.00069
[29] *Id.*
[30] *Id.*
[31] Swain, D.L., Langenbrunner, B., Neelin, J.D., & Hall, A. D. (2018). Increasing precipitation volatility in twenty-first century California. *Nature Climate Change* VOL 8 | MAY 2018 | 427–433, https://doi.org/10.1038/s41558-018-0140-y
[32] Huang, X., Stevenson, S., & Hall, A. D. (2020). Future warming and intensification of precipitation extremes: A "double whammy" leading to increasing flood risk in California. *Geophysical Research Letters*, 47, e2020GL088679. https://doi.org/ 10.1029/2020GL088679.
[33] Swain et al., *op. cit.*
[34] Huang et al., *op. cit.*
[35] HDR, "Alternative 5-year drought based on the five-consecutive driest years in the 1976-2011 period of record," October 6, 2020 ("five-consecutive driest years scenario"). Available at: https://nidwater.com/wp-content/uploads/2020/10/Consecutive-5-year-drought-Memo_Alt1.pdf

(climate change hydrology, FEIS projected future FERC flow requirements, existing NID demand).

3. The Network further recommends that HDR create 2 tables or sets of tables to replace Table 3-1 of the *Water Supply Analysis TM*. HDR should base one table or set of tables on Run 4 and another on Run 5. Rather than limiting the tables to the 5-year drought sequence alone, the Network recommends showing the output for each year in the period of record, with the data for 5-year drought sequence highlighted.
4. The Network recommends that new tables replace the line for "environmental flow requirement" with data that shows the actual amount of water required from storage in each year to meet unrecoverable minimum instream flows. (*See* parallel recommendation #4 for the *Water Demand Projection Model Update*, above).
5. The Network recommends that, in addition, HDR include in a revised *Water Supply Analysis TM* total system storage for October 15 of each year in the period of record under Run 4 and Run 5. The Network further recommends that HDR use this data to form the basis for a revised Section 2.2 (Carryover Storage) in the *Water Supply Analysis TM*. The revised Section 2.2 should present October 15 total system storage in both table format and as screenshots of DSS-Vue output. (*See* example in CDFW comments, Appendix 1, Figure 3, p. 5).
6. The Network strongly recommends deleting the existing Table 2-1 from the *Water Supply Analysis TM*. As described above, minimum instream flows, unlike consumptive demand, are met in part by uncaptured water. Conflating minimum instream flows with consumptive demand is inherently confusing.
7. Similarly, the Network recommends removal of minimum instream flows from Table 6-3 ("Total System Projected Demands") in the *Water Supply Analysis TM*, and should instead limit the table to Annual Consumptive Demands (currently labeled "Annual System Demand").
8. As stated above, the Network recommends replacing the term "environmental flows" in the *Water Supply Analysis TM* with the more neutral term "minimum instream flows."
9. The Network recommends that NID commission HDR to update the "red-blue" calculator developed during relicensing that quantifies water that belongs to PG&E and NID respectively in ResSim model runs.
10. Finally, the Network recommends the revised *Water Supply Analysis TM* include analysis of the opportunity for NID to acquire the Lower Drum Hydroelectric Project and partially re-operate it to prioritize water supply over power generation.

V. Comments on the Use and Policy Implications of the *Water Projections Memoranda*

Fundamental to the Network's concerns and recommendations is the overall purpose of the Water Planning Projection documents.[36] The Water Planning Projection documents utilize sophisticated models to analyze a particular set or range of inputs and assumptions. The models themselves are tools that allow a variety of inputs and assumptions to be evaluated and reported

[36] *See* Nevada Irrigation District's 2020 Water Projection documents generally, *Hydrologic Analysis TM*, *Water Supply Analysis TM*, and *Water Demand Projection Model Update.*

as needed.[37] The documents as presented are based on a particular set of inputs to the models at a point in time. As NID pointed out in its web document, *How NID Uses Water Planning Projections,* "[t]here is a wide range of assumptions that can be made for any particular data point, all of which may be equally valid." [38]

NID should continue to make use of the tools it has developed to engage the public in considering different assumptions and evaluating different outcomes. For instance, different approaches to a 5-year drought, as discussed above and already begun by NID, is only one of many potential assumptions that should be tested. NID can draw many different subjective conclusions from these documents because they turn on District policy decisions. It will be helpful for NID Board and staff, and for the general public, for the water planning documents to begin to describe the interaction between policy decisions and water supply and demand assumptions and outcomes.

Requests and Recommendations:

1. NID will need to consider costs and risks on a variety of issues and levels, and will need to weigh various tradeoffs of costs and risk. The Network recommends that NID develop a policy outline document that describes some of the major policy decisions NID must make in considering future water planning.
2. The Network recommends that one policy area in a policy outline document focus on NID's need to address and prioritize the degree to which NID devotes resources to maintaining and upgrading existing infrastructure, including the watershed itself.
3. The Network recommends that a second policy area that NID focus on is the degree of preference that NID will give to existing customers and uses of water as opposed to new customers and uses.

VI. Conclusion

The Network requests that NID adopt and implement the requests and recommendations enumerated above.

The Network once again thanks NID for releasing these important documents to the public and soliciting comments before incorporating them into the updates of the AWMP and UWMP in 2021. These tools are key for developing District policy priorities that will in turn assist our region to achieve a sustainable water future. The Network recognizes the value of an ongoing dialogue regarding the details of assumptions, model inputs, and model functions to achieve a mutual understanding for water planning purposes.

Thank you for consideration of the Network's comments on NID's Water Planning Projection documents. Please contact Traci Van Thull, Coordinator, Foothills Water Network, if you have any questions.

---

[37] For example, *Water Demand Projection Model Update,* p. 6 states, "The demand model described in Section 5 includes the ability to adjust the growth rate to evaluate the impacts of growth on water demand."

[38] *How NID Uses Water Planning Projections, op. cit.*

Respectfully submitted,

_____

Traci Sheehan Van Thull
Coordinator, Foothills Water Network
PO Box 573
Coloma, CA 95613
traci@foothillswaternetwork.org

_____

Melinda Booth
Executive Director
South Yuba River Citizens League
313 Railroad Avenue, Suite 101
Nevada City, CA 95959
(530) 265-5961 x 205
melinda@yubariver.org

Chris Shutes
FERC Projects Director
California Sportfishing Protection Alliance
1608 Francisco St.
Berkeley, CA 94703
blancapaloma@msn.com
(510) 421-2405

Mike Davis
Associate Director, California Central Valley
River Restoration
American Rivers
120 Union St.
Nevada City, CA 95959
mdavis@americanrivers.org

Dave Steindorf
California Field Staff
4 Baroni Dr.
Chico, CA 95928
dave@amwhitewater.org

CALIFORNIA
OUTDOORS

Dedicated to preserving, promoting, and experiencing California's unique rivers.

PO Box 401
Coloma, CA 95613

Nate Rangel
President
California Outdoors
P.O. Box 401
Coloma, CA 95613
nathanjrangel@gmail.com

FLY FISHERS INTERNATIONAL
NORTHERN CALIFORNIA COUNCIL

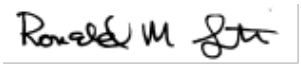
C. Mark Rockwell, Dr

Mark Rockwell
Director and VP of Education
Northern California Council, Fly Fishers International
5033 Yaple Ave.
Santa Barbara, CA 93111
(530) 559-5759
mrockwell1945@gmail.com

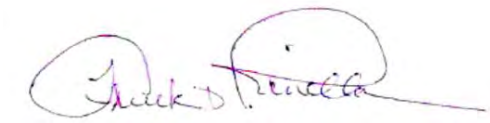
Friends of Bear River

Dianna Suarez

Dianna Suarez
Friends of Bear River
P.O. Box 1174
Colfax, CA 95713
suareztribe@yahoo.com



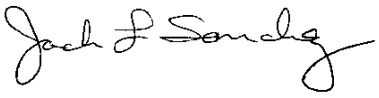
Ronald Stork
Senior Policy Advocate
Friends of the River
1418 20th Street, Suite 100
Sacramento, CA 95811-5206
(916) 442-3155 x220
rstork@friendsoftheriver.org



Frank Rinella
Director and Conservation Education Chair
Gold Country Fly Fishers
303 Vista Ridge Dr.
Meadow Vista CA, 95722
sierraguide@sbcglobal.net

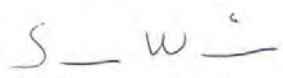
_____

Eric Peach
Boardmember
Protect American River Canyons
P.O. Box 9312
Auburn, CA 95604
parc@jps.net



_____

Jack Sanchez
President and Coordinator
Save Auburn Ravine Salmon and Steelhead
P.O. Box 4269
Auburn, CA 95604
alcamus39@hotmail.com



_____

Sean Wirth
Conservation Committee Chair
Sierra Club - Mother Lode Chapter
909 12th St #202
Sacramento, CA 95814
wirthsoscranes@yahoo.com

_____

Brian J. Johnson
California Director
Trout Unlimited
5950 Doyle Street, Suite 2
Emeryville, CA 94608
(510) 528-4772
bjohnson@tu.org

NID Response to:

Foothills Water Network

Letter introduction states FWN expectations, opinions, and interpretation of AWMP and other NID planning efforts. Comments noted.

Letter Section II, question 1-3
The NID Upper Division runoff average value of 232,600 AFY is what is measured by NID in the Upper Division waterways. It does not include the entire watershed. The hydrological modeling does include the entire watershed, and therefore reports the higher, total watershed average runoff of 383,500. The details of the hydrological climate change modeling are presented separately in the Water Planning Projections, as available on the NID website.

Letter Section III, question 4
No specific citation provided, NID followed the procedures from the "*Handbook for Water Budget Development: With and Without Models*"

Page 10
2016-2020 annual precipitation as measured at the Bowman Lake gage is added in Table 4-2.

Page 16
Comment reflects an expectation for the AWMP. As stated, NID's approach is to address long-range climate planning in Plan for Water.

Page 18
Comment requests additional information beyond the scope of the AWMP.

Page 28
Tables 3-1 and 3-7 indicate the water is "ordered amount".

Page 32
15 percent is the current assumed value as referenced in the RWMP. Section 5.3 identifies efforts to enhance understanding of water loss.

Page 33
Repeat comment. See Letter Section II, question 1-3

Page 34-35
Table 4-1 follows the DWR submittal table format and requirements. Runoff is measured through stream gages and storage is determined through reservoir height and storage curves. A detailed description of NID's water rights and operational strategies is beyond the scope of the AWMP. Commenter's request to better understand NID operational strategies is better suited for Plan for Water.

Water budget calculations added in Appendix.

Page 41
The water budget calculation approach is based on data currently available to NID. Section 5.3 identifies efforts to enhance customer-specific data collection that could be used in the future in water budget models that require such detailed data and inputs.

Page 42
Water budget calculations added in Appendix.

Page 44
Surface outflow assumptions are specifically presented in Section 5.2.2.

Page 45
Plan for Water is the water resources planning process that other NID efforts will use. PFW will provide demand and supply projections, as well as triggering points and water resources management options for NID to include in their infrastructure and other program plans, such as the Raw Water Master Plan.

Water budget calculations added in Appendix.

Page 47
AWMP statute (10826(d)) states "Include an analysis, based on available information, of the effect of climate change on future water supplies." The HDR Hydrology memo is NID's most recent effort on evaluating climate change impacts to water supply.

The Water Planning Projections are a suite of technical memoranda that were published by NID in Summer, 2020. Public meetings were conducted to describe each respective memorandum and receive questions and comments. The hydrologic model is based on the FERC licensing approved model, with the updated model reviewed by California Department of Fish and Wildlife. In addition, extra climate change modeling runs were conducted as requested by the public to include different drought assumptions. The NID website presents all the technical memorandum and additional modeling results, explanation of the planning projections, a glossary, frequently asked questions, and responses to the public's questions identified during the outreach process. The Water Planning Projections are the beginning of the Plan for Water process and there is continued opportunity for discussion and update of the planning assumptions during Plan for Water.

Table 6-1 column heading is updated to state "Percent of Average Annual Historical Runoff at Each Location", as is also stated in the text preceding the table.

As presented in the hydrology analysis in Water Planning Projections, NID believes a future projected 75 percent decrease in runoff during Year 1 of a drought using 1987-1991 hydrology is a significant impact.

Page 48
Table 6-2 is a summary from the Water Planning Projections. See Page 47 response.

The AWMP is not a fractured rock groundwater investigation. The AWMP statutes include groundwater as a supply component. As NID does not use groundwater supply, the plan does not provide additional groundwater analysis. Further information and data would be beneficial to long term NID planning efforts, as listed in Section 5.3.

FWN Letter Dated October 19, 2020 – Water Planning Projection Documents.
This letter provides comments to the Water Planning Projection Documents, developed prior to the AWMP. These comments are better addressed in the Plan for Water process.

To: NID Board and Staff
Regarding: NID 2021 Draft AWMP, (a Raw Water Management Plan)
Date: March 16, 2021
From: Dianna Suarez, Friends of Bear River

Thank you for the opportunity to comment on the 2021 Draft AWMP (report)

1. I am grateful for the new concept of a Water Budget to look holistically at a systems level analysis. This is a big step into the 21st century for NID. It is often difficult for some people to shift into a new way of doing things or looking at things. Seeing water in relationship to the entire landscape provides deeper understanding and an ability to see how formerly "outside factors" affect the mission of the District. Proper focus on a systems level water budget will offer a wider view of all the elements affecting NID and its future ability to work with natural processes while avoiding unneeded expenses and false starts.
2. Page 7 of the report states, "The organization of this 2020 update generally follows the outline presented in the DRAFT DWR 2020 AWMP Guidebook. The final guidebook has not yet been released. This 2020 update **solely addresses the legislative requirements**." Does this mean that NID sees no benefit in developing the tools offered through this process? This statement gives the impression that NID hopes to solely "check the boxes" and nothing more. This unsupported, staff generated report speaks to apparent IGM and staff resistance and reluctance to move forward, in contrast to a vibrant and energetic Board of Directors.
3. Page 8, section 1.2 states, "The most recent Board of Directors' District Goals identified the importance of developing and managing the District's resources in a self-determining manner to protect and provide local control of the water supply." The most recent Board of Directors is not the current Board of Directors. The attempted rewrite of the 2018 Strategic Plan was a failure, and was abandoned when the former GM took over the process and then lost interest in completing the document. This lack of direction moving forward into the integrated water planning process creates a vulnerability from recalcitrant elements within NID "staff" who generally oppose collaboration, cooperation, and innovation. This reflects the same "attitude" as in comment #2. The whole point of this exercise is collaboration, cooperation, and gaining the tools needed for the 21st century.
4. You can lead a horse to water but you can't make them drink. You can give a Water District enlightened and empowering tools but you can't make them use those tools. The DRAFT DWR 2020 AWMP Guidebook is easy to follow and understand. The NID 2021

Draft AWMP is confusing, inconsistent, and of questionable value. I don't know whether the data and assumptions were too scattered, or the District deliberately left out the progression and methodology for their calculations and assertions. The result is an outline of the correct subjects and headings with a disordered conglomeration of verbage instead of clear methodology and findings. As a reader, one can generally tell whether the writer of a report understands the subject based on how easy it is to understand. This writer did not understand the intent of the Guidebook and that may be why this report seems to have an agenda to inflate demand and diminish supply

5. Page 13, Table 2.2 lists 20 new customers a year. With 25,000 customers to date, that means a 0.08% increase annually. (that is 8/100 *of one percent*) If you only count the 5,000 raw water customers, it is a 0.4% (4/10 *of one percent*) annual increase. So this is the "increased irrigated acres that must be met with a District supply", a prelude for Centennial Dam, the hidden agenda. An annual 7% water rate increase is not factored into this random assertion leaving doubt as to its value moving forward.
6. Table 2-3 lists the total District storage capacity **280,085 acre feet**.
7. Page 13 states, "To maintain proper flow rates through customer delivery points the water surface in the canal is maintained at certain levels, as is typical for miner's inch delivery systems. However, this also results in water exiting the canal at the downstream terminus. *Many of these spills are then captured again at the next downstream diversion point* for another canal." This seems to be the excuse for not measuring tailwater waste. It is not wasted because it goes into the ground where NID can pick it up and sell it again thereby ***double counting the water volume sold.*** And as we later find out, NID counts what they can "sell" as equivalent to what is "used" thereby artificially inflating demand. Using the new Water Budget approach, this volume would be accounted for with an inflow to the groundwater system. If this volume was later part of a groundwater system outflow and an inflow to another system, it can be tracked and accurately reported. Lack of tailwater measurement is a glaring deficiency in this plan because this careless and sloppy handling of water leads to an artificially inflated demand and *perceived* shortage of supply; and ultimately to an unneeded billion dollar dam.
8. On page 9 of the draft document, Spaulding Reservoir is not labeled on the map. I also note that most of Bear River and the upper division is not within the NID boundaries.
9. Page 19 of the draft document states, "The District sells agricultural and raw water based on flow and volume basis, depending on customer type, as identified in Table 2-9. The majority of irrigation customers are provided water based on miner's inch deliveries. Some of the wholesale sales to other agencies are based on volume and flow values per the purchase contracts." This method may have worked well when water was abundant

and accuracy didn't matter. When a District decides that they need to destroy an entire River Canyon because they are too lazy and cheap to measure their water accurately, and don't want to spend for meters but choose to commit to millions of dollars for property and a potential billion dollar debt for a dam, then measuring becomes a priority.

10. Page 21. "These values represent the District's best estimate with the existing facilities and information available." There is no basis for the estimated level of accuracy in the report.
11. Page 22, (pg 16 of document) states. "In addition to the hydrologic impacts on NID's supplies, there can also be regulatory reduction as well, as during the last drought the State mandated supply curtailments and NID was not able to access its available supply." Please document and explain the specific curtailments to customers during the drought of 2011-2015.
12. Same page, section 2.3.2 states, "As part of the Plan for Water process, NID has developed a climate change hydrologic model to project and analyse supply availability under different climate change scenarios." **Where is the Water Budget???** It goes on to say, "Findings from this process will then be used to identify and evaluate mitigation measures. Mitigation measures could include the following:" There is a whole lot of verbage after this but none of it addresses the fact that NID does not know how much water is beneficially used. That is a fatal flaw that makes the Plan for Water useless.
13. Page 25, (19 of document), section 2.3.4, Stage 1Drought contingency, states, "Forecast April 1 Available Supply: **234,999** to 211,500 AF." The District has **280,085** AF storage capacity which seems to be well above what is considered adequate. Why then does staff continue to steer analysis toward additional storage, ie. Centennial Dam?
14. I am aware of treated water customers cutting water use, but was told that raw water customers did not curtail use during the last 5 year drought. Please present documentation of raw water use curtailment.
15. Page 35, (29 of document), states, "The District currently does not collect or maintain detailed independent cropping information. The District relies on the self-reported surveys provided by customers. The District also does not collect or maintain detailed parcel-level soil information, irrigation system information, or specific agronomic water requirements for individual customers. As such, the District uses the types of crops and acreages in the self-reported survey to estimate water use components (for example, evapotranspiration (ET) in the water budget calculation as described in Chapter 5." In other words the data is inaccurate and arbitrary. For instance a scientific study, in **Science of the Total Environment**, *entitled Implications of Changing Spatial Dynamics of Irrigated Pasture*, performed specifically in Nevada County within NID boundaries

verified 4,273 acres of irrigated pasture within NID in 2005. Ten years later, the amount of verified irrigated pasture was 3,470 acres, a reduction of 19%. This stands in stark contrast to NID's reported 19,727 acres of irrigated pasture. What are we to make of such a gross overstatement of NID irrigated acres? And the insistence of increasing need for more acres? It simply is not believable and speaks to the lack of public trust in these documents.

16. The total district acreage of 287,000 reports 32,323 irrigated acres. That is 11% of the landbase that uses 90% of the water "delivered". Does this water consuming area supply 90% of the economic revenue? Coupled with the astonishing inaccuracy of the irrigated pasture report, using so much water without a clue on what cost benefits result is unconscionable. Bear River Canyon currently brings in more money from illegally procured property rentals than would result in water sales, but with this scale of inaccuracy, who would ever know?
17. Page 36, (pg 30 of the document) section 3.2, Environmental Water Use. NID has struggled to get on a helpful planning schedule. The District seems to be constantly behind the curve when it comes to planning and often puts "the cart before the horse." This results in massive waste of money and depletion of resources. The first problem was the failed 2018 Strategic Plan Update. The second is the failure to complete or even consider an Environmental Water Management Plan. If that had been done, maybe this section would not be woefully inadequate. An understanding of the environmental water budget could offer many avenues to meet stewardship requirements while minimally impacting water sales and delivery. Instead, the District has chosen to take an oppositional stance to "State Regulations". Is it really the State's job to force NID toward being the "Watershed Steward" of its Vision Statement? There are values for all the Environmental Resources listed in Table 3.3 and NID knows the acreages from past environmental documents, but simply chooses to ignore that these entities exist. This is the underlying system from which NID takes its abundance of water. Maintaining the environmental system creates the water supply. An Environmental Water Management Plan is the key to working effectively with nature for water and for life.
18. Page 37, section 3.4. NID has effectively passed on the subject of groundwater. A large number, and possibly the majority of citizens in both Placer and Nevada Counties rely on groundwater wells for domestic water. NID is not interested in groundwater but they have a significant impact on that water source. Continuing to disregard the importance and enhancement of groundwater violates the public trust. Engaging with the groundwater portion of the Water Budget model would begin to educate everyone around this evolving resource.

19. Page 47, section 5.1.1 states, “Converting the agricultural farm gate delivery mechanism to a metering systems that utilizes enclosed, pressure pipe methods will be an extensive and costly process that NID has yet to implement.” Wouldn’t that be better and more prudent than destroying a River Canyon, the Nisenan Cultural connection to their Sacred River, Sacramento Region river recreation and fish access promised for perpetuity, and a billion dollar debt? Stepping up to implement accurate water measurement is something that the District will be compelled to do in the future as water becomes important statewide. Why not start now?
20. Page 53, Table 6.2, States, “A five-year historic drought was input into the hydrology, with results presented in Table 6-2. Note the projected runoff values are solely based on the hydrologic characteristics of the five-year drought selected, and a different five-year period will result in different results. Results indicate the watershed is significantly impacted in this drought condition, with runoff reducing up to 75 percent in the early drought period, and 50 percent in later drought period.” This result has no basis in fact because we don’t know where the figures come from. Others have addressed this issue and it remains interesting which sub basins were included in each result. On another table NID has asserted a 450,000 acre foot runoff. The real runoff is clearly a mystery and making such drastic statements based on nothing is designed to create fear-mongering and nothing more.
21. Page 54, Section 6.2, states, “Local climate change impacts will likely affect current supply source options. There are approximately 52,000 parcels in the District’s service area. Only approximately 25,000 receive NID treated or raw water. It is assumed the remaining 25,000 parcels are served by fractured rock wells or are undeveloped. A prolonged drought, or increased winter runoff could reduce the amount of water that percolates into the rock fractures, reducing the amount of fractured rock groundwater. This in turn could cause private wells to be insufficient for use. Failing wells will likely cause an increase in the NID customers and subsequent demands, as existing residences will need to connect to the water system.” This is the plan.
    This is interesting but not accurate. The entire Bear River watershed is an underfit system meaning that the River itself can transport many times the current flow and indeed did at one time have the whole upper Yuba watershed running in the Bear. The headwaters of the Bear are below the seasonal snow line and unaffected by the projected lack of snow. Increased runoff will actually increase groundwater storage within the Bear River watershed.

Comments on 2021 Draft AWMP, (a Raw Water Management Plan)
Dianna Suarez 3/16/21

I will supply photos of these extensive flood plains that Bear River has to offer. Increased runoff would increase groundwater storage.

I have spent lots of time witnessing and documenting groundwater storage in Bear River canyon. Please see my youtube channel at this link. https://www.youtube.com/channel/UCXSs2sGAHUNrjp-B5A7altA/videos?view_as=subscriber

Thank you for the opportunity to comment,

Dianna Suarez,

[redacted]

NID Response to:
Dianna Suarez

1. No specific edits and/or comments regarding the AWMP are included in the comment.

2. Plan for Water was envisioned three years ago to provide the planning efforts needed to prepare the 2020 UWMP and AWMP. Due to delays in the PFW process and State-mandated deadlines for the 2020 UWMP and AWMP, NID needs to create the UWMP and AWMP updates without the benefit of completing the PFW process. Therefore, the UWMP and AWMP are developed per regulatory requirements, and the long-range planning and management options are postponed to the better-suited PFW process.

3. No specific edits or question regarding the AWMP are included in the comment.

4. No specific edits or question regarding the AWMP are included in the comment.

5. No specific edits or question regarding the AWMP are included in the comment.

6. No specific edits or question regarding the AWMP are included in the comment.

7. Improving canal water accounting is addressed in Section 5.3.

8. Spaulding Reservoir is not owned by NID.

9. No specific edits or question regarding the AWMP are included in the comment.

10. As stated, the estimates represent the District's best estimate based on the data available.

11. In 2015 Governor Brown issued Executive Order B-29-15 mandating 25 percent reduction in urban potable water usage. The order was later revised and NID was mandated to reduce demands by 36 percent. Additional information on State Board and Governor actions during the most recent drought are available on the State Board website.

12. The water budget is presented in Chapter 5, with supporting calculations in the appendix.

13. No specific edits or question regarding the AWMP are included in the comment.

14. During the 2015 drought, potable water customers were mandated to reduce demands and NID requested raw water customers voluntarily reduce demands.

15. Crop report information relies on customer survey responses. Customer self-definition of irrigated pasture may be different than source cited.

16. No specific edits or question regarding the AWMP are included in the comment.

17. No specific edits or question regarding the AWMP are included in the comment.

18. The AWMP is not a fractured rock groundwater investigation. The AWMP statutes include groundwater as a supply component. As NID does not use groundwater supply, the plan does not provide additional groundwater analysis. Further information and data would be beneficial to long term NID planning efforts, as listed in Section 5.3.

19. No specific edits or question regarding the AWMP are included in the comment.

20. As stated in the text, the projected climate change impacts are summarized from the Hydrologic Analysis Technical Memorandum – Final Report (HDR, 2020). The analysis is part of the NID's Water Planning Projections that have been presented to the public in workshops and are available for review with other public comment and response information on the NID website.

21. No specific edits or question regarding the AWMP are included in the comment.

From:	Otis Wollan
To:	NID Info
Subject:	AWMP comments
Date:	Tuesday, March 16, 2021 11:54:19 AM

To: NID Board and Staff
Regarding: NID 2020 AWMP comments
Date: March 16, 2021

From: Otis Wollan
Placer County Resident, and former 5 term PCWA Director
NID Stakeholder, as proposed NID projects impact my Placer County property directly

Thanks to NID for the opportunity to comment on the Draft Agricultural Water Management Plan (AWMP). I would like to make some overall comments before addressing the particulars of this once-in-every-five-years planning exercise. The Draft AWMP was rushed, and the process choppy and disrespectful of public interest and input. But worse is that in my view the AWMP has at least two fundamental flaws that make the document nearly useless as a tool for planning, and may not even satisfy the basic reporting requirements mandated by DWR. First some process observations:

- There was very little time between the release of the AWMP and the Board workshop. This doesn't allow enough time to compare to previous AWMP's from NID, or for comparison with plans that are in process with other agencies.

- Apparently, at least one Boardmember had not even taken the time to read the AWMP. Perhaps there was not enough time for the governing board either?

- The consultant's Powerpoint presentation did not match the Draft AWMP. Graphs were in a different format, and were composed differently. The new information in the Powerpoint was confusing, with no time for analysis before oral comment.

- On the day after the Board workshop, I discovered that the AWMP appendices link that was provided with the agenda is a 294 page document that includes the Powerpoint which was presented on March 10. Yet on March 11, the AWMP appendices link provided on the NID website is still the earlier March 3 version which was 212 pages, and I had depended on the website draft for my review. The material provided the public still as of this writing (March 11) is inconsistent. This inconsistency cost me personally a couple of hours of time simply tracking down the discrepancies in the background material provided by NID, and is the source of genuine annoyance. It is five days before the comment period ends, and the links

provided the public are still not consistent.

- Staff stated that this Plan was actually not a plan at all, but a report on past activities. A quick comparison to the 2015 NID AWMP showed there was a lot of material in the 2015 AWMP that was useful for planning purposes, but that these graphs and information are not contained in the current 2020 Draft. Inconsistency of content between the two documents is confusing; further, inconsistent formatting makes comparison and analysis challenging.

The fact that NID Staff does not consider this report an actual plan is a missed opportunity for the Board. NID should be taking every opportunity to refine planning elements, as NID has embarked on a large scale plan for the future, and could benefit by using every opportunity to further that Plan for Water. That said, I would suggest going even further, and using the AWMP as a key planning document, as has PCWA. Please note below the approach taken to these DWR mandated reports by PCWA, that essentially PCWA considers the documents to be planning documents primarily for internal information and guidance, and only secondarily as mandated reports to DWR. The following text box is excerpted from the 2015 PCWA UWMP.

Specific Comments to the NID AWMP: Two Fatal Flaws

In my view there are two fundamental flaws that make this report nearly useless. The first is found in Section 3.2, which is the DWR provided survey template for discovering what agricultural crops the ag water is used for. While the survey is valid for valley agriculture, most of the activity in the foothills is not “agriculture” but is more accurately described as “rural lifestyle”. I point out that over 80% of the information gathered is so general that it does not begin to describe the true land use patterns, and thus is useless for planning.

The second fatal flaw is that the fundamental method used for measuring the quantity of water delivered to the “farmgate” is the miner’s inch orifice. This device does not measure water quantity; it describes and caps maximum potential delivery over a period of time--- it does not measure the actual amount of water delivered.

Basically, if NID can’t measure the quantity of water delivered, and doesn’t know what most of the water is used for, what good is this AWMP plan? I will attempt to describe these two fatal flaws in more detail.

Section 3.2

Is the NID AWMP report of water use a report on agricultural water use? Or not?

NID uses a self-reported questionnaire to its raw water customers to determine profile of water use. This survey does not provide an accurate picture of water use. Table 3.2 on

pages 29-30 show three categories which exemplify this:

Crop acres	**2016**	**2017**	**2018**	**2019**	**2020**
Forage - Irrigated Pasture	18,867	19,309	19,419	19,702	19,727
other	754	743	722	729	731
Family Garden, Orchard ,YD	6,026	6,146	6,174	6,244	6,409
subtotal 3 categories	25,647	26,198	26,315	26,675	26,867
Total Irrigated Acres	30,629	31,470	31,835	32,205	32,323
3 categories % of total	83.73%	83.25%	82.66%	82.83%	83.12%

Forage - Irrigated pasture is the largest category, almost of the acreage surveyed. What is this water used for? Is it pasture for cattle or sheep? Is it a fish pond? Is it 4H projects? Is it used for horses, which are not an agricultural use? Is it used for hobby farming, or pet animals? Is it fire protection? Is it simply used as a catch all category for a landowner that simply wants to "green it up" with landscaping? Is it extended yard space? Is it water features? Is it ornamentals? or a swimming pool? Is it wasted water, or aesthetic creek maintenance? Or is it just bad data and misreporting?

This category is too large to be such an unknown. Compare how this DWR questionnaire is used in the TID AWMP; the pasture category in that survey showed 5000 acres out of a total of 140,000 acres surveyed. In TID's report, there are no categories that are "catch alls", as this one appears to be. NID customers who are surveyed have no specific categories that describe their water use, and so use this category because their uses do not match specific crops which are more relevant for valley agriculture. NID needs its own survey, and needs good local water use category data and analysis for NID planning, then fulfill the DWR mandate in an appendix, as is the practice at PCWA.

This also raises the question of what is NID's definition of agriculture; presumably, agriculture would have some criteria using commerce as a measure. For example, what gross receipts from agricultural sales is the threshold for commercial agricultural water use? What is defined as small scale or hobby farming? Does filing a schedule F tax return serve as a legitimate criteria?

Accurate information is needed to determine whether the water use is agricultural, or is effectively a luxury use of water for rural lifestyles. Policies and rates need much more detailed levels of information in order to be fair and equitable. A community might decide that agriculture is important for the character of the community, in which case various kinds of support can be implemented. But it is equally likely that social inequities are in place under the current system of lack of information, and that urban treated water rate payers are subsidizing suburban/rural raw water customers for lifestyle amenities/luxuries.

Family Garden, Orchard, YD is another category that does not distinguish between small agricultural uses like a vegetable garden or small orchard, and suburban uses like lawn and

ornamental landscaping.
Together with the “other” category which is a total mystery, these three categories represent more than ⅘ of NID’s agricultural water use (actually 83.12%), or roughly 90,000 AF of the total 110,000 AF of contracted “agricultural” water deliveries.
Not knowing how ⅘ of the water supply is used is just unacceptable. NID will never know if water efficiency can be achieved by agricultural water efficiencies like replacing flood irrigation with sprinkler or drip irrigation, or if the suburban use can be made more efficient by irrigation method improvements or turf replacement or xeriscape replacement of water guzzling ornamental landscaping. Or if the “on farm” (better described as “on site”) water is simply being dumped because it is delivered by gravity, and there is absolutely no incentive for conservation.
Another observation that may be useful is that almost all of the net increase in the volume of raw water deliveries over five years are in these same categories. Raw water deliveries grew by over 5% from 2016 through 2020, and over 80% of that growth are listed as either irrigated pasture or family orchard/garden. What is that growth actually? Is it farming? Is it suburban rural lifestyle use? Again, from the survey, there is no way to determine what is the nature of growth over the past five years. Knowing what that growth was would offer key insights as to what growth and demand will look like in the future. What is most troubling of all is that the subjective unverified data collected by this survey is seriously at odds with scientifically collected and field verified data that was in a study conducted by researchers at the University of California.

Significant mismatch of customer survey data with scientifically collected data.
I refer NID to a study reported in the journal ***Science of the Total Environment*** entitled *Implications of changing spatial dynamics of irrigated pasture, California’s third largest agricultural water use* by Shapero, et al.
The purpose of the study was to demonstrate the efficacy of using remote sensing and object-based image analysis (OBIA) to determine extent and trends in irrigated land use and land cover, and irrigated pasture in specific. The study methodology used as its case study Nevada County and specifically the land area clipped to the boundary of Nevada Irrigation District. Here is a quote from the study’s abstract:
“Due to its significant contribution to agricultural water use worldwide, we develop a methodology to remotely sense irrigated pasture using a California case study. Irrigated pasture is the third largest agricultural water use in California, yet its economic returns are low. As pressures mount for the agricultural sector to be more water efficient and for water to be directed towards its most economically valuable uses, there will likely be a reduction in irrigated pasture acreage. A first step in understanding the importance of irrigated pasture in California is establishing a methodology to quantify baseline information about its area, location, and current rate of loss. This study used a novel object-based image analysis and supervised classification on publicly-available, high resolution, remote sensing National Agriculture Imaging Program (NAIP) imagery to develop a highly accurate map of irrigated pasture in a rural county in California's Sierra foothills. Irrigated pasture was found

to have decreased by 19% during the ten-year period, 2005–2014, from 4,273 to 3,470 acres."

There are significant revelations from this study. As the study intended, it shows the trend in irrigated pasture over the study period of 2005-2014 which is the reduction of irrigated pasture by 19%. But more startling is that acreage total in Nevada County irrigated by NID is only 3,470 acres in 2014. If the reduction trend continued through 2020, that figure could very well be closer to 3000 acres of irrigated pasture in Nevada County. This is a total of irrigated acreage that was scientifically determined by OBIA and field verified.

This is in stark contrast to the acreage figure provided by the NID survey. The NID survey includes both Nevada and Placer County. But the difference is indeed startling. If you more than double the 3000 acres of irrigated pasture land to estimate the amount of irrigated pasture in Placer County, the estimated acreage would be 7 or 8 or 9 thousand acres of irrigated land in NID's total jurisdiction. What a difference compared to the 20,000 acres of irrigated pasture depicted in the NID survey. That implies that the difference between scientifically collected data and the subjectively collected NID survey data might be off by a factor of 2 or even 3.

This discrepancy is jolting. It needs explanation. It begs for a different methodology for use as a basis for agricultural water management planning by NID. This level of discrepancy calls for a much higher level of investigation by NID to discover what is actually going on. At some point and in some venue, would NID please address this study, the shadow it casts over NID's subjective data, and what the trends imply for our future water use.

So, as a layman, I can only rely on my eyes and ears as a local resident for over fifty years. If there were truly 20,000 acres of irrigated pasture in commercial agriculture here, traffic on our rural roads would be two ton flatbeds with farm machinery and cattle/sheep/pig trucks and the like. But what the traffic looks like is a rush hour display of Mercedes Benz, Lexus, Audi and Teslas, with the daytime occasional new pickup pulling a fancy horse trailer. In between are tourist cars of folks just taking a pleasure tour down a country road.

So, is NID's raw ditch water used for agricultural purposes, or is it used for lifestyle luxuries? Which is waning and which is waxing? The answer is non-trivial. NID's narrative over the past seven years has been that the water supply is threatened by growth in demand and reduction in supply from climate change, thus a billion dollar dam is necessary. But what is the rallying cry? NID's urban water customers are not threatened, as their water use is 10% of the water supply pie. Commercial agriculture seems to be a small percentage of the raw water use, so a story about not having water for growing food for our tables doesn't cut the mustard. Will the rallying cry be: NID must not allow any shortage of irrigated pasture for the hobby horses of the wealthy? Knowing what is actually going on and being truthful and transparent is fundamental to the policies and principles that will be the foundation for NID's sustainable future. NID has plenty of work to do just maintaining the operating the enormous and sprawling water distribution system, and supporting/sustaining beneficial uses of its abundant water rights and supply. The water system is a huge gift to the community, and NID does not need to be distracted or derailed

by a fictional narrative based on bad data.

Recommendations:

As a starting point, we need a clear and true picture of what is going on here.

1. get better information from NID customers with a more accurate survey that details the myriad water uses of rural lifestyle in addition to “agriculture”

2. Begin the process of auditing the larger users for truly useful information about how to measure customer water at the gate, how efficiently the customer currently uses water, and what conservation options might conserve more water. Ultimately, the best management practice will be to know the customer---- what is the true volume of water used/needed, and how well does that customer use the water? A full audit of each customer will very likely allow a smart water use that will conserve a very large percentage of the raw water currently delivered. The way to start is with an audit of a varied subset of customers that will provide guidance as to where the best investments can be made, what the costs and benefits of an audit will be, how extensive it needs to be, and what kind of future conservation investments make sense.

3. Begin the process of gathering objective data through a water audit conducted by staff so that at least data can be objective and uniform, rather than self-reported by the customer.

4. Begin to use best available scientific methods for collecting and/or corroborating data. This includes LIDAR and other object-based image analysis, as was used in the study cited above.

A finer grain understanding of how much water is used for what purposes could provide a foundation for actions toward efficiency. Presently, NID is operating in an information vacuum, which cannot serve as the basis for either a legitimate report of what is happening, nor does it provide a basis for planning a sustainable future.

Section 8

There is so much in Section 8 that is not truly informative, and worse, the basic assertion regarding water measurement is simply wrong. The point of this section is to assure that water is being measured accurately. On page 211 in the Appendices (the March 3 version which is still the version linked on the NID website, not the March 10 version which is apparently only available on the link provided on the March 10 Board meeting agenda), NID’s Engineering Manager states that the miner’s inch delivery method “measures customer deliveries”. That is simply not true. The miner’s inch diversion orifice measures the maximum potential delivery at any given time, not the actual delivery. The orifice caps flow so that the contracted amount of water cannot be exceeded. But it does not measure

quantity delivered.
Director Johansen provided in the public workshop an excellent example of this. On his farm, a pond is used, and irrigation water is pumped from the pond. NID water is used to fill the pond at the point of need, usually beginning early summer. Pond storage then supplements NID delivery of 6 miner's inches in the late Fall, when the pond is drawn down. So on this farm, NID deliveries are not needed for the first month(s) of the irrigation season. This is a wise water management regimen, but it also clearly indicates that the miner's inch orifice does not measure the quantity of water delivered.
NID staff insisted that District wide, the contracted water amount was "close" to the actual water delivered as measured at the top of the system. Yet, numerous examples suggest that the actual quantity delivered to customers is considerably less than the contracted amount. Additional examples are listed below. But the point is this. Until NID can actually measure the quantity delivered to the customer, NID will never know the extent of "losses" to evaporation or canal leakage or tailwater waste or other factors. If NID cannot distinguish the amount of water in delivery at the "farmgate" as opposed to tailwater loss, or evaporation loss, or canal leakage or even water theft, NID will never make the right investments in efficiency.
NID staff insists that the system of distribution is well managed by the ditch tenders, and that tailwater waste is minimized by effective oversight and the seat-of-the-pants management from this human observation. As a PCWA Director from 1987 to 2008, I heard that same story countless times. However, PCWA pursued installing telemetry at both the head and tail of canals, and ultimately the data from tailwater measurement justified the installation of automated gates at the head of the canals operated in real time with the telemetry at the tail of the canals. In a private conversation with the previous General Manager at PCWA, after several years of operation, this fully automated management of canal flow appeared to be saving an average of 15% of the total volume delivered over the irrigation season. That same kind of water efficiency may or may not be available to NID in its canals, but it all starts with data, and measuring tailwater flows with telemetry.
Several additional examples of how miner's inch delivery does not accurately measure quantity:

- Director Hull cited an example of a constituent who needed perhaps ½ miner's inch but actually paid for 3 miner's inches to guarantee future delivery as part of property value for a future sale of the property in case the buyer wanted to irrigate the acreage. This paper water purchase is part of the real estate market, not agricultural water management.

- My own experience within PCWA's ditch water system, where on 65 acres we determined we "needed" 3 miner's inches though we could probably get away with 1 ½ or 2, which is why we bought 5 miner's inches as a hedge against drought measures. The water was cheap, and the guarantee against future drought measures

was financially cheap as opposed to the losses we would experience if water was cut back too far. The “wasted” water ran down the creek through the middle of the property, was quite pleasant, and actually supported some small trout. But most of this use of water was clearly a luxury.

- In a private conversation with the water master for a private property owners association that is an NID customer, he offered the following profile:
    - 47 property owners in the association
    - 2 or 3 had direct diversions from NID ditch where they bought for commercial ag purposes of cattle ranching on the larger parcels
    - 22 of the landowners cooperated in the association to collectively buy 34 miner’s inches at one diversion point. Of that collective group:
        - 2 or 3 filed Schedule F tax forms, and those were for horse breeding
        - Only one had any sizeable orchard and garden, and that was not commercial
        - The 18 or so others were basically 10 acre ranchettes that grazed horses
        - The water master characterized the parcels as haphazardly irrigated, using perhaps half the purchased NID water
        - The pastures were poorly managed, so they were mostly irrigating weeds
        - Several of the parcels had extensive landscaping that was not xeriscaped
        - The diversion was by gravity to a holding tank, which cut off the ditch water when it was full. His estimate was that they were using roughly ½ of the contracted amount. (Thus the miner’s inch volume measurement was inaccurate by 50%)

- In general, landowners above the ditches who pump will use less water than they contract for, since pumping is a significant cost for their irrigation water

- In general, landowners below the ditches will tend toward waste. In one case, a family friend, he diverts 3 miner's inches, but needs only one, and uses the other two to simply run through his pond to keep it "fresh". The excess 2 miner's inches then goes down a creekbed, where nearly all of it is eventually lost to evaporation.

There are about as many individual situations and water use profiles in the NID raw water delivery system as there are individual customers. The only way to truly know what is going on is through an audit.

Table 7-2

In this table referring to "On-Farm Irrigation Capital Improvements", NID states: "It is not locally cost effective for the District to finance capital improvements to agricultural customers because due to the District's water rights and supply infrastructure fixed costs, there are no incremental cost savings from potential local on-farm capital improvements."

As indicated from the comments on Section 3 and Section 8, NID does not really know how much water is delivered to the agricultural customer, nor does NID know how well that water is being used by the customer, and therefore there is no way for NID to know if there is any incremental cost savings available to the District through on-site capital improvement investments.

In contrast, the District claims it needs at least 30% more storage from a billion dollar new reservoir, yet at the same time as no clue as to what conservation opportunities exist in its current delivery of water. What if a thorough water audit revealed that 30-50% of current ag water deliveries could be saved through conservation measures? Would that alternative be given equal consideration for costs and benefits as opposed to a new dam/reservoir?

With NID's current lack of knowledge about its actual water deliveries and all the details of its use by the customer, there is no basis for NID's assertion in Table 7-2. NID is effectively abandoning any possibility of the usefulness of demand side management. The only assertion made by NID staff was that conservation investments in on-site customer water use were too expensive and would result in "sticker shock". There is no basis for this assertion of cost versus benefits, nor any comparisons of the benefits and costs of alternative means for meeting customer needs.

Finally, it was disturbing to hear Directors' remarks that intimated that NID information gathering and interaction with customers was some form of "policing" customers. There seemed to be some kind of underlying belief that NID customers had full privacy and private ownership rights to use the water they purchased in whatever way they wanted, and the market for water was a completely laissez faire free marketplace with any data gathering viewed as intrusion and violation of privacy.

It is a very different paradigm to acknowledge that the surface water belongs to all the

people of California (it's in the Constitution), and that NID is a chartered special district of the State for the purpose of stewarding the water rights granted to the District, and that it is the bona fide responsibility of the District to assist customers in understanding water use and water efficient best management practices, and even to assist the customer in many ways to achieve efficient water use.

I would like to make comments at some point to the climate change section of the AWMP. But frankly, I do not have the time I need to study this element of the AWMP. This element was not clearly presented. I did not see clearly the assumptions that NID was using. Basically I found the section confusing, even though I have been studying climate change and water use for a quarter of a century. If NID is going to address climate change, it needs to be done in depth, explaining clearly what are the assumptions, how does NID's approach compare to what others have done, and much more. I hope to see a clear presentation of NID's climate change analysis in the future, but in this rushed AWMP report, my expectations are low that between the draft and the final report, much can be done to make this presentation thorough and understandable for a layman.

Again, thanks for the opportunity to make comments. I wish NID well, and hope that future reports and planning exercises can be better done than this one.

NID Response to:

Otis Wollan

Bullet 1
No specific edits or question regarding the AWMP are included in the comment.

Bullet 2
No specific edits or question regarding the AWMP are included in the comment.

Bullet 3
No specific edits or question regarding the AWMP are included in the comment.

Bullet 4
The Public Hearing version of the AWMP and Appendices was requested by the Board for inclusion in the packet so that they could see the changes made from the first two public workshops as well as include the written public comments prior to the Board agenda deadline. The versions were purposefully titled separately and kept separately for version control and Brown Act purposes.

Bullet 5
NID is using the Plan for Water process as the integrated water resources planning effort, and the UWMP and AWMP as summary and reporting documents to support statute requirements.

PCWA did try to use the 2015 UWMP as their strategic planning document. Based on that experience, PCWA is no longer using that approach, and instead conducting their strategic planning separately and using the UWMP as the summary and regulatory reporting document.

General comments regarding Crop Report Data
The crop report data is customer-response driven as acknowledged in the report. Section 5.3 addresses management objectives to improve crop report data.

General comments regarding farmgate miners inch measuring
Section 5.3 addresses management objectives to improve water measurement.

The remaining comments presenting author's experiences, opinions, research, and anecdotal evidence regarding water management practices are noted.

From:	Jeff Litton
To:	NID Info
Subject:	AWMP Comments
Date:	Tuesday, March 16, 2021 10:48:49 PM

CAUTION: This email originated from outside your organization. Exercise caution when opening attachments or on clicking links from unknown senders.

Thank you to NID for the ongoing work to serve our community, and for making life possible for us here in the foothills. I am extremely appreciative to everyone working at the district and the department of water resources for the thousands of hours and millions of dollars to support our state and local economy. I am concerned about the Draft Ag Water Management Plan because it appears to give data that is both illegal and unsubstantiated by science.

California water code **CHAPTER 1. Definitions and Interpretation of Division [307 - 1062.20] 1004.**
As used in this division, "useful or beneficial purposes" shall not be construed to mean the use in any one year of more than $2^{1}/_{2}$ acre-feet of water per acre in the irrigation of **uncultivated** areas of land not devoted to cultivated crops.

Pastures of customers are not cultivated land, they are grass pastures. The district claims these customers are using 40 inches of water on each of the 19,727 acres of pastures, but 40 inches is 30% larger than the 30 inches dictated by California law. I am not a lawyer, but as this legal code reads, it appears the district is breaking the law. If that is the case, what is the penalty for such a crime, and are there consequences for the people approving it after being informed of the law?

The job of the directors is to ensure the best available data is being used to manage the district. The current practice of relying on customer surveys does not accomplish this, especially when the Pasture category really is a catch all for people who want to just green up their land, have a large lawn, or have animals like horses. There does not appear to be any requirement for this to be commercially used land, and therefor calling its use agricultural is arguably false because it's not producing anything. This is the same as a golf course or park, where the purpose of irrigation is for pleasure, not for production. If golf courses and parks are in the recreation category, then green lawns should be in the same recreation category. Spraying my lawn doesn't mean I'm engaging in agriculture.

It is possible to utilize the best available data which has so far been missing from the AWMP. Thanks to innovative scientific work that is being done by scientists at UC Berkeley, highly accurate scientific data can now be analyzed using aerial and satellite images to measure the amount of irrigated pasture land. This has already been done in Nevada County, and can easily be applied to the rest of the district.

This is an innovative approach that was only developed and published in scientific journals in 2017, so while the technology was not available for past Ag Water Management Plans, it can now be used to guide our district in the direction of accuracy and integrity. This practice should be adopted by the district immediately because the district currently only has the ability to measure raw water customers, not raw water usage by customers. I could put 1 million gallons on my acre or I could put zero, and the district would have absolutely no idea or way to measure that raw water. This scientific method of analyzing actual imagery is a simple and fast analysis that can take place today, before the installation of water meters on raw water customer sites. Arbitrary capricious actions like adopting this plan before actual research has

been done is a step in the wrong direction, and will have lasting consequences.

In fact, the observations done using object-based image analysis by the scientists at UC Berkeley calls into question the integrity of the data presented by the AWMP. It appears there are far fewer acres being irrigated with 40 inches of water than what is reported by the customer survey and presented in this report. Additionally, LIDAR technology additionally has the ability to give actual scientific data revealing the amount of pastures being irrigated within the district. The AWMP says 40 inches of water are applied to each of the 19,727 acres of pasture land on average. In combination with the amount of rain that naturally falls here in the foothills, that combined number exceeds the 60 inches which is the requirement to be considered a rainforest. There are not 19,727 acres of rain forest here in the district, and so we need to start using science to accurately measure the number of acres that are receiving irrigation before this information is used for the Urban Water Management Plan and Raw Water Master Plan. We know that approving the overstated current demand means we could then extend this flawed data into our future demand models, which would likely have dire consequences, and potentially bankrupt the district.

Thank you for your time.

Jeff Litton

NID Response to:

Jeff Litton

Comments regarding crop report data
The crop report data is customer-response driven as acknowledged in the report. Section 5.3 addresses management objectives to improve crop report data.

Comments regarding aerial imagery data
Section 5.3 addresses management objectives to improve crop report data, including using available aerial imagery.

TO:	**Nevada Irrigation District Board of Directors & Staff** **Grass Valley, California** **info@nidwater.com**

FROM:	**Gary Zimmerman** **Nevada City, California 95959** [redacted]

RE: NID 2020 AWMP comments

March 16, 2021

PLEASE ADDRESS & RESPOND to the FOLLOWING COMMENTS:

1. Please explain how the NID Master Plan, Ag Water Management Plan, and Urban Water Plans are coordinated & updated.
   Or are they in the current 2020-2021 planning process?
2. Please explain why and how the COMMENT PERIOD on the AWMP has been extended with the addition of another NID AWMP Meeting.
3. Please explain what models and data were used in the DRAFT AWMP and why use of those models, and the most extreme draught possibility (the five worst years ever…) were appropriate for the Draft AWMP.
4. Were the same models and data used in the NID Master Plan? Urban Water Plan? Other Plans?
5. Is the "extreme model" used in the DRAFT AWMP similar to the models used by other water districts? The DWR? The State of California? Federal Water Agencies?
6. What "CLIMATE CHANGE" Model(s) was used in the draft AWMP? The NID Master Plan? The NID Urban Water Plan?
7. There seems to be considerable confusion between aspects of the DRAFT, different versions, different reports, different data? WHY?
8. The DRAFT PLAN seems to be rushed and hurried, with limited public comment, at least initially. This is an important long-term planning document, that along with the other mentioned planning documents, will have an important effect on the success of NID in the future.
   It seems that NID should be taking their time and using the planning process to ensure success, rather than rushing into failure…

THANK YOU for the OPPORTUNITY to COMMENT on the DRAFT AWMP.

Gary Zimmerman
Nevada City, CA

NID Response to:

Gary Zimmerman

1,8. The 2020 AWMP and UWMP are developed to meet the State regulatory requirements specific to each document. Plan for Water is the planning process that allows for the long-term water resources planning.

2. The draft AWMP was released on March 3, 2021. The comment period was open through the end of the Public Hearing on March 24, 2021.

3-6. The Water Planning Projections are a suite of technical memoranda that were published by NID in Summer, 2020. Public meetings were conducted to describe each respective memorandum and receive questions and comments. The hydrologic model is based on the FERC licensing approved model, with the updated model reviewed by State Department of Fish and Wildlife. In addition, extra climate change modeling runs were conducted as requested by public to include different drought assumptions. The sample drought period shown in the AWMP uses the 1987-1991 hydrology, not the "extreme drought possibility (the five worst years ever…)" as stated by the commenter. The NID website presents all the technical memorandum and additional modeling results, explanation of the planning projections, a glossary, frequently asked questions, and responses to the public's questions identified during the outreach process. The Water Planning Projections are the beginning of the Plan for Water process and there is continued opportunity for discussion and update of the planning assumptions during Plan for Water.

The AWMP reports past customer sales, other uses, and supplies, it does not project demands or supplies. AWMP statute (10826(d)) states "Include an analysis, based on available information, of the effect of climate change on future water supplies." The Water Planning Projections are NID's most current effort to identify the effect of climate change on future water supplies.

7. The Public Hearing version of the AWMP and Appendices was requested by the Board for inclusion in the packet so that they could see the changes made from the first two public workshops as well as include the written public comments prior to the Board agenda deadline. The versions were purposefully titled separately and kept separately for version control and Brown Act purposes.

From: Mary Ann [redacted]
Sent: Monday, March 15, 2021 11:45 AM
To: Ricki Heck <division1@nidwater.com>; Chris Bierwagen <division2@nidwater.com>; Karen Hull <division3@nidwater.com>; Laura Peters <division4@nidwater.com>; Rich Johansen <division5@nidwater.com>
Cc: BoardSecretary <BoardSecretary@nidwater.com>
Subject: ***Possible Spam-QUARANTINED***Draft of Draft Agricultural Water Management Plan

Please accept this concern for the March 16th meeting

I am concerned about recent data and modeling in NID's Water Planning Projections because they were incomplete and seemed to inflate demand. It is unclear to what extent the Water Planning Projections informed the AWMP.

Please make these changes so it can be fairly and fully reviewed.

- Give the public additional time to review the Plan,
- Include comments in the final Plan from the March 24, 2021 Public Hearing, and
- Publish an explanation that states to what degree the Water Planning Projections were included in the Plan.

Respectfully,
Mary Ann Coleman
[redacted]

NID Response to:

Mary Ann Coleman

The draft AWMP was released on March 3, 2021. The comment period was open through the end of the Public Hearing on March 24, 2021. All comments received through the end of the Public Hearing are included in the appendix.

The Water Planning Projections are a suite of technical memoranda that were published by NID in Summer, 2020. Public meetings were conducted to describe each respective memorandum and receive questions and comments. The hydrologic model is based on the FERC licensing approved model, with the updated model reviewed by State Department of Fish and Wildlife. In addition, extra climate change modeling runs were conducted as requested by public to include different drought assumptions. The NID website presents all the technical memorandum and additional modeling results, explanation of the planning projections, a glossary, frequently asked questions, and responses to the public's questions identified during the outreach process. The Water Planning Projections are the beginning of the Plan for Water process and there is continued opportunity for discussion and update of the planning assumptions during Plan for Water.

The AWMP reports past customer sales, other uses, and supplies, it does not project demands or supplies. AWMP statute (10826(d)) states "Include an analysis, based on available information, of the effect of climate change on future water supplies." The Water Planning Projections are NID's most current effort to identify the effect of climate change on future water supplies.

From: **R. Burger** [redacted]
Subject: Against the Centennial Dam Project
Date: March 15, 2021 at 11:08 AM
To: NID Info info@nidwater.com

RB

Dear NID Board:

Building dams to manage water is old technology that destroys habitat, wastes water and burdens residents with unwarranted costs. Ground water storage is a proven technology that saves water where is cannot evaporate, while recharging aquifers. Please consider this option as a better alternative to a dam.

Please note that the customer water usage rates you list in the Draft Agricultural Water Management Plan are over stated and are illegal under California Law.

Roger Burger

Grass Valley, CA

NID Response to:
Roger Burger

Long-range planning issues are addressed in the Plan for Water process and specific infrastructure projects are addressed through the capital planning process.

Crop reports present customer supplied data and are not verified by NID.

From: **Felicia Tracy** [redacted]
Subject: NID Ag Water management plan
Date: March 14, 2021 at 4:04 PM
To: NID Info info@nidwater.com

FT

CAUTION: This email originated from outside your organization. Exercise caution when opening attachments or on clicking links from unknown senders.

To Whom it may concern:

My parents purchased over 100 acres in 1942 from [redacted] At that time NID water had been purchased to irrigate pasture land for dairy cattle as well as to raise up to 3 crops of hay. Throughout the years, Ted Schaps, my father, irrigated the Emigrant Springs Ranch property to provide various livestock….cattle, sheep, and horses with premium forage as well as cutting hay for them until the 1960's. He carefully used water , with a ditch system, reusing runoff to conserve water yet provide beautiful and productive irrigated pastures. NID also provided for a home orchard and water for both domestic and wild animals. It allows for habitat of numerous species. During the past 50 years, this has been primarily a commercial horse ranch, raising Thoroughbred horses, training show and ranch horses, boarding, and giving clinics and lessons. In addition it has also been recently utilized for grazing cattle, sheep, and goats in addition to horses.

Today, Emigrant Springs is essential for fire protection, creating a fire break green belt in an area with few ranches but many small acreage homes. It is a private haven green belt for horseback riding, hunting, and hiking.

Farmers and ranchers take pride in caring for their land and the environment. Water is essential to economically sustain agricultural production. NID pricing has increased out of proportion to the potential revenue realized by those striving for the best use of our foothill properties. A rural lifestyle is one of Nevada Counties greatest assets for all residents. Lands that are protective against wildfires are of great concern for all citizens. It is the ranchers who irrigate who provide those assets to our County; it is they who have shouldered the cost for the benefit of all. The agricultural community helped fund and found NID, and in no way should they targeted financially for urban policies that have required treated water.

I ask you to look beyond your budget concerns, many due to your own errors. Please look to the future of Nevada County and the history and importance of conserving agricultural lands and safe open space and how you can further contribute to sustaining our environment and quality of life for all citizens. Emigrant Springs has been home and the life-blood for four generations in my family. We are doing our best to continue that legacy.

Sincerely yours, Felicia Tracy, Emigrant Springs Horsemanship

NID Response to:

Felicia Tracy

Comment Noted. The Comment does not address the adequacy or accuracy of the document. NID will address more general inquiries concerning long range District planning in the Plan for Water process.

From: **Dawn Forcier** [redacted]
Subject: Centennial Dam
Date: March 14, 2021 at 5:59 PM
To: NID Info info@nidwater.com

DF

CAUTION: This email originated from outside your organization. Exercise caution when opening attachments or on clicking links from unknown senders.
To whom it may concern regarding the March 16 deadline to comment,

I strongly oppose the building of the Centennial Dam. The loss of habitat, homes, historic lime kiln, and Native American historic sites is horribly wrong and unethical!

Update and improve the reservoirs we already have.

Listen to the people who live here and stop letting money and greed exploit us!

Dawn Forcier
[redacted]

NID Response to:

Dawn Forcier

Comment Noted. The Comment does not address the adequacy or accuracy of the document. NID will address more general inquiries concerning long range District planning in the Plan for Water process.

From: **Meg McGuire** [redacted]
Subject: Centennial dam.
Date: March 14, 2021 at 9:25 PM
To: NID Info info@nidwater.com

MM

CAUTION: This email originated from outside your organization. Exercise caution when opening attachments or on clicking links from unknown senders.

I want it known that myself and many others in our community strongly oppose this dam. I haven't met a single person who wants thos to move forward. We are not truly in need of the extra water storage, and losing this section of the river is a huge cultural loss. We already have Rollins, and do not want another muddy, steep sided lake. There is no call to remove people from their homes. I am also troubled by the rumour that extra water would be sold to socal. They built a city in a desert. We should not be raping our natural resources to feed a beast that will never be satisfied.

NID Response to:
Meg McGuire

Comment Noted. The Comment does not address the adequacy or accuracy of the document. NID will address more general inquiries concerning long range District planning in the Plan for Water process.

From: **Teena Schwartz** [redacted]
Subject: Centennial Dam Comments
Date: March 15, 2021 at 11:10 AM
To: NID Info info@nidwater.com

TS

CAUTION: This email originated from outside your organization. Exercise caution when opening attachments or on clicking links from unknown senders.

You have not provided good enough justification for this project. I am currently an NID Customer and I do not agree with this project and believe it should be cancelled. You need to collect water elsewhere so as not to destroy what already exists and ruin the habitat for animals and people who currently reside here. You can do better than this, you just haven't figured it out how yet but you should.

Bestina Schwartz
[redacted]

NID Response to:

Teena Schwartz

Comment Noted. The Comment does not address the adequacy or accuracy of the document. NID will address more general inquiries concerning long range District planning in the Plan for Water process.

From:	Debbie Porter
To:	NID Info
Subject:	NID meeting on March 16, 2021
Date:	Monday, March 15, 2021 1:15:44 PM

CAUTION: This email originated from outside your organization. Exercise caution when opening attachments or on clicking links from unknown senders.

I am writing to show support for the proposed Centennial Dam/reservoir. I live in South County (Golden Oaks) and our area has serious water needs and shortages. We are appreciative of the Potable water systems that NID has supported and also would like to see the creation of a stable water supply for irrigation water. As we all understand, fire danger is very real and when property owners can irrigate their property, it helps with fire suppression. Many wells in south county have failed (either gone dry or changed to unusable water). A new water supply from a new reservoir will help guarantee a good supply of water that can be used to create potable water or for irrigation. I would like to continue discussions I have had with NID about planning for a pipeline to run down Dog Bar Rd. that will carry irrigation water that can be made available for the many neighbors needing a better source of water. I would like to see a plan to supply some of that water to keep the South Wolf Creek water flowing in dry years as this creek supports many species and planes and helps keep down fire worries.

We need to support a plan that keeps our water in the county to provide water security here. There seems to be a constant cry for more recreation areas and this new reservoir would supply that in a planned way. Public access for our many waterways is a real problem - South Yuba River has parking and trash problems that get worse every year as local and out of area people flock to the rivers and lakes. People park (illegally and dangerously) along Dog Bar where it is near the Bear River. A new reservoir will provide parking access, recreational uses (boating, trails, etc) and water storage that will enhance our area.

Hidden Falls park in Placer County has become very popular and many parking and trespassing issues have arisen. Out of area use has overwhelmed the county and that park site.

I see the construction of the Centennial Dam as a win-win for our area.

Please consider going forward for plans to construct.

Debbie Porter

President of the Golden Oaks Association.

[redacted]

NID Response to:

Debbie Porter

Comment Noted. The Comment does not address the adequacy or accuracy of the document. NID will address more general inquiries concerning long range District planning in the Plan for Water process.

From:	Kathleen Madeira
To:	NID Info
Subject:	Centennial Dam
Date:	Monday, March 15, 2021 4:13:53 PM

I've been a resident of Nevada County for 28 years and would like to voice my opposition to the Centennial Dam project. I see no reason for building a dam and sending the water to projects in the valley, while destroying native habitat as well as disrupting native lands for profit while Nevada County residents pay for more expensive water. Please rethink this decision for the good of our county.

Thank you,

Kathleen Madeira

NID Response to:

Kathleen Madeira

Comment Noted. The Comment does not address the adequacy or accuracy of the document. NID will address more general inquiries concerning long range District planning in the Plan for Water process.

From:	Lila Rose Frisher
To:	NID Info
Subject:	Public Comment - opposing Centennial dam
Date:	Monday, March 15, 2021 6:14:11 PM

Hello,

My name is Lila Frisher, and I'm an NID customer and resident in Grass Valley, CA.

I oppose the building of new dams in general. I'm specifically opposed to new dams on Bear River for environmental and native rights reasons.

Thanks,

Lila Frisher

[redacted]

[redacted]

Sent from my iPhone

NID Response to:

Lila Rose Frisher

Comment Noted. The Comment does not address the adequacy or accuracy of the document. NID will address more general inquiries concerning long range District planning in the Plan for Water process.

From:	Louann Carroll
To:	NID Info
Subject:	Dam project
Date:	Monday, March 15, 2021 9:10:36 PM

CAUTION: This email originated from outside your organization. Exercise caution when opening attachments or on clicking links from unknown senders.

I hope the information I've just received about raising water rates and taxes for a dam is not true.

During this extraordinary time, putting additional stress on families who have homes in the area, not to mention tax increases is clearly criminal.

Louann Carroll

Nevada County

Sent from my iPhone

NID Response to:

Louann Carroll

Comment Noted. The Comment does not address the adequacy or accuracy of the document. NID will address more general inquiries concerning long range District planning in the Plan for Water process.

From:	Heidi Hansen
To:	NID Info
Subject:	Fwd: NID Adds Evening Meeting for Public Review of AWMP - Set for Thursday, March 18th at 6:00 p.m.
Date:	Tuesday, March 16, 2021 8:14:40 AM

CAUTION: This email originated from outside your organization. Exercise caution when opening attachments or on clicking links from unknown senders.
Ladies and Gentlemen of the NID Board of Directors,

Thank you for holding a meeting in the evening so that those of us that work Monday through Friday can participate and understand your thinking on various matters affect NID and its customers - of which I am one. I have heard you may be discussing the need to raise rates. In principle I am not opposed to rate increases as long as robust analysis has been completed on the agency's current and forecasted costs to provide the service and any diminishing returns impact of increased water pricing. By the later a mean a reduction in the number of people buying water when rates are raised which in turn offsets the anticipated revenue growth from the pricing increase. Anecdotelly, the last time NID passed the 5 year rate increase plan I saw about a 1/3 of my neighbors stop buying NID irrigation water and much more dry acreage adding to fire danger. Will NID be completing such analysis to support continuing to increase our rates? I please know I understand the cost of everything is up. I just want to see if water pricing can be associated to fire danger and come to the best balance between the two.

I look forward to hearing from you all at the meeting on the 18th.

Heidi Hansen
[redacted]

---------- Forwarded message ---------
From: **Nevada Irrigation District** <nidwater@specialdistrict.org>
Date: Thu, Mar 11, 2021 at 4:38 PM
Subject: NID Adds Evening Meeting for Public Review of AWMP - Set for Thursday, March 18th at 6:00 p.m.
To: [redacted]

(Grass Valley, CA March 11, 2021) – The Nevada Irrigation District (NID) today announced that it has added an additional meeting for the public to review its Public Draft 2020 Agricultural Water Management Plan (AWMP). The meeting, to be held on Thursday, March 18th at 6:00 p.m., will be the second of three opportunities for the public to learn about NID's AWMP.

The Public Draft AWMP is also posted on NID's website and was

reviewed at a Board Workshop on March 10th. The final Public Hearing is expected to be held at the March 24th regular meeting of the NID Board of Directors. Anyone wishing to submit comments on the Public Draft AWMP is encouraged to send them in writing by email to info@nidwater.com. Comments received by the end of the day **March 16, 2021** will be included in the draft report for discussion at the public hearing. All comments received prior to board adoption will be considered and included in the final AWMP.

The California Water Code requires agricultural water providers to prepare an Agricultural Water Management Plan every five years. NID delivers approximately 90% of its water to agricultural customers. The report includes information about NID's roughly 5,600 agricultural customers such as past water usage, conservation efforts, and other management elements. The AWMP must be adopted by the NID Board of Directors by April 1, 2021 and is due to the State Department of Water Resources within 30 days of adoption.

Due to COVID-19, NID is currently holding its meetings via Zoom. Full details and instructions for how to access its meetings are provided on each meeting agenda posted on nidwater.com prior to the meeting. More information about the AWMP can be found on NID's website at NIDwater.com

NID Response to:

Heidi Hansen

Comment Noted. The Comment does not address the adequacy or accuracy of the document. NID will address more general inquiries concerning long range District planning in the Plan for Water process.

From:	song
To:	NID Info
Subject:	damn dam
Date:	Tuesday, March 16, 2021 9:37:48 AM

Building a massive dam and asking the people to pay for it is a HUGE PROJECT and it should INCLUDE PUBLIC MEETINGS... DO NOT GO FORWARD UNTIL PEOPLE CAN HAVE MEETINGS OR IT WILL APPEAR TO BE WHAT IT IS- A PUSHED THING WITHOUT COMMUNITY SUPPORT.

NID Response to:

song

Comment Noted. The Comment does not address the adequacy or accuracy of the document. NID will address more general inquiries concerning long range District planning in the Plan for Water process.

From:	Barbara White
To:	NID Info
Subject:	meeting March 16 Centennial Dam
Date:	Tuesday, March 16, 2021 12:01:09 PM

I am writing to show support for the proposed Centennial Dam/reservoir. I live in South County (Golden Oaks) and our area has serious water needs and shortages. We are appreciative of the Potable water systems that NID has supported and also would like to see the creation of a stable water supply for irrigation water. As we all understand, fire danger is very real and when property owners can irrigate their property, it helps with fire suppression. Many wells in south county have failed (either gone dry or changed to unusable water). A new water supply from a new reservoir will help guarantee a good supply of water that can be used to create potable water or for irrigation. I would like to continue discussions I have had with NID about planning for a pipeline to run down Dog Bar Rd. that will carry irrigation water that can be made available for the many neighbors needing a better source of water. I would like to see a plan to supply some of that water to keep the South Wolf Creek water flowing in dry years as this creek supports many species and planes and helps keep down fire worries.

We need to support a plan that keeps our water in the county to provide water security here.

There seems to be a constant cry for more recreation areas and this new reservoir would supply that in a planned way. Public access for our many waterways is a real problem - South Yuba River has parking and trash problems that get worse every year as local and out of area people flock to the rivers and lakes. People park (illegally and dangerously) along Dog Bar where it is near the Bear River. A new reservoir will provide parking access, recreational uses (boating, trails, etc) and water storage that will enhance our area.

Hidden Falls park in Placer County has become very popular and many parking and trespassing issues have arisen. Out of area use has overwhelmed the county and that park site.

I see the construction of the Centennial Dam as a win-win for our area.

Please consider going forward for plans to construct. I copied this letter from our Golden Oaks President. I agree with everything she said. Barbara White

8 You and 7 others
1 Comment

Seen by 37

Like

Comment

NID Response to:

Barbara White

Comment Noted. The Comment does not address the adequacy or accuracy of the document. NID will address more general inquiries concerning long range District planning in the Plan for Water process.

From:	mark johnson
To:	NID Info
Date:	Tuesday, March 16, 2021 4:03:08 PM

CAUTION: This email originated from outside your organization. Exercise caution when opening attachments or on clicking links from unknown senders.

An empathic NO on any talk, discussion, planning or voting in favor of the billion dollar boondoggle known as the "Centennial Dam."

ANY BOARD MEMBER WHO VOTES AGAINST THE INTENT OF THE PEOPLE MUST BE REMOVED FROM OFFICE BY ANY MEANS!

Sincerely, Mark Johnson.

NID Response to:

Mark Johnson

Comment Noted. The Comment does not address the adequacy or accuracy of the document. NID will address more general inquiries concerning long range District planning in the Plan for Water process.

From: [redacted]
To: NID Info
Subject: NID Centennial Dam Project
Date: Tuesday, March 16, 2021 4:12:45 AM
Attachments: image001.png

CAUTION: This email originated from outside your organization. Exercise caution when opening attachments or on clicking links from unknown senders.

To Nevada Irrigation District:

I am very worried about the environmental impact of the NID Centennial Dam Project and I vehemently oppose this project. I have comments and questions that I would like addressed.

This Centennial Dam will destroy a vibrant and beautiful stretch of river that brings enjoyment to the mass population of both Placer and Nevada County. It will destroy properties and campgrounds with a lake that will fluctuate with the needs of farmers that are not even in our own county. It is a money-making interest of NID that will not filter back into our community, but instead will be a great cost to both Nevada and Placer residents.

We see dammed lakes, such as Folsom Lake, Shasta Lake, Oroville Lake, Lake McClure, etc. in the middle of summer, even in good water years drawn down as they provide water showing 20 to 100 or more feet of ugly steep bare earth, a basic mud pit. How are native animals who depend on the Bear River for water supposed to access this in the summer? Are you going to provide access for these animals to reach water when the lake is at its lowest point?

We live in an area known for extreme wildfires. The Bear River is easily crossed during fire season by wildlife, such as deer, raccoons, mountain lions, bobcats, bears, etc. during fire season. If you put in a lake, animals would not be able to cross it for safety. What measures are you going to provide for wildlife in case of fire?

What studies have been performed and will be performed to identify any endangered species living on and in the affected areas of the Bear River? We have river otters; can they live in a lake?

If the Bear River Bridge will be flooded, Nevada County residents along the Dog Bar Road/ Magnolia Road corridor will be required to drive to Highway 49 to access I80. This route passes three schools (Bear River High School, Magnolia Middle School and Cottage Hill Elementary School) and a major subdivision (Lake of the Pines) whose population is nearly 4000 people. During morning rush hours, drivers are competing on a 2-lane road with students trying to get to school and people from the subdivision trying to get to work. The dangers of this situation could be absolutely tragic. What studies have been done and will be done to measure the impact on air pollution and the environment in general from the additional burning of fossil fuels to accommodate the extra driving miles?

I understand that the Bear River is full of mercury from historic mining sites. That dredging and bulldozing will stir up this mercury and the warm water of the proposed lake will alter it.

"A significant problem caused by new dams in North America is mercury poisoning. New flooding above a dam removes mercury from the ground that is now underwater. This mercury is deposited on the bottom of the new reservoir. Microorganisms through the process of methylation convert mercury into methyl mercury which is soluble in water. The mercury then can pass through the food chain and eventually reach humans through consumption of fish from the reservoir waters" http://geoscience.wisc.edu/~chuck/Geo106/krohm.html

I am very worried about the impact of our well and ground water. Our water stands at 1800 feet, about the level of the proposed dam when full. How will the lake and dam impact the ground water? What is the potential for contamination of local ground water that local residents depend on for their wells? What is the potential for depletion of and/or diversion of local ground water? What is the potential that our wells will dry up? Who will be responsible for our wells and our safe drinking water if there is contamination or if they dry up?

We are a Registered Organic Farm. If our water is contaminated or if we are forced to use NID water, which has been treated, who will compensate us for the loss of use of our farm?

How will these actions be prevented from harming the abutting property owners and residents from the harmful effects of breathing toxic dust stirred up from the construction activities? We live ½ mile from the river. Will there be medical compensation from the results of toxic dust?

We and our neighbors have a deeded easement to the Bear River. Will we be compensated for that easement?

What is the total cost (best estimate and worst estimate) of the Centennial Dam project? How will the project be funded? Will Nevada County and/or Placer County residents and property owners be taxed to pay for the project? Will California state taxpayers fund the project? Will Federal funds be used?

Who will pay for the rebuilding of roads, bridges, and driveways that will be flooded by the lake? What will be the cost to Nevada County and Placer County taxpayers?

Will the NID sell water from the lake? If so, to whom? Will the water be sold to abutting property owners who currently draw their water from private wells? Nearby Nevada County and Placer County residents? Further county residents such as Lincoln and Roseville? Other developers/water districts?

Will the NID sell electricity generated from the Centennial dam? If so, to whom? PG&E? SMUD? Other agencies or California counties? How will the electricity be available to abutting property owners? To nearby Nevada County and Placer County residents? To further county residents such as Lincoln and Roseville? Other developers? Other states?

What advantage is gained by the abutting property owners who must sacrifice their ownership/use of and access to the Bear River to make money for the NID, utility companies, and developers? How will the current owners share in the wealth generated by the Centennial Dam?

What will be the elevation of the lake water at 100% capacity? At 60% capacity? At 20% capacity?

What will be the peak average yearly water elevation? The median average yearly water elevation? The low yearly average water elevation?

At what percent of capacity will water be released from the dam for flood control? At that percent of capacity, what will the elevation of the water be?

What is the source of water that will fill the Centennial Lake? With Rollins Lake and Combie Lake drawing water from the local Bear River watershed, how much water is predicted to be available beyond their current capacity over the next 10 years? 20 years? 30 years? Does the NID envision drawing water from other sources, such as the Yuba River, to fill Centennial Lake?

If so, are agreements with other water districts and property owners in place? What will be the environmental impact of routing water from those other sources?

What measures will be taken to protect the wildlife that depends on the Bear River for its homes and habitat? Specifically, on my property: river otters, raccoons, foxes, crayfish, and waterfowl. Will affected wildlife by relocated to a suitable/equivalent habitat?

I would like to list alternatives to this dam of which are much better choices:

Optimizing existing facilities, raise existing dams:

- Rollins dam, already studied, NID ownership, 25-40,000 Acre Feet
- Fordyce dam, already studied, PGE partnership, 15-25,000 Acre Feet
- Silver Lake dam, already studied, NID ownership
- Camp Far West, owned by South Sutter Water District (SSWD), under FEMA orders to re-construct spillway for flood safety concerns. Could be modified and raised. Partnership with SSWD, 15-30,000 AF

Meadow restoration options: Bear Valley, Lake Norden

Forest management for water yield and fire safety, can increase yield 10-30%, and hedge against future losses from evapo-transpiration, with biomass utilization for power generation + carbon sequestration

Groundwater recharge ponds using Mehrten Formation to increase storage of the North American River Groundwater Sub-basin.

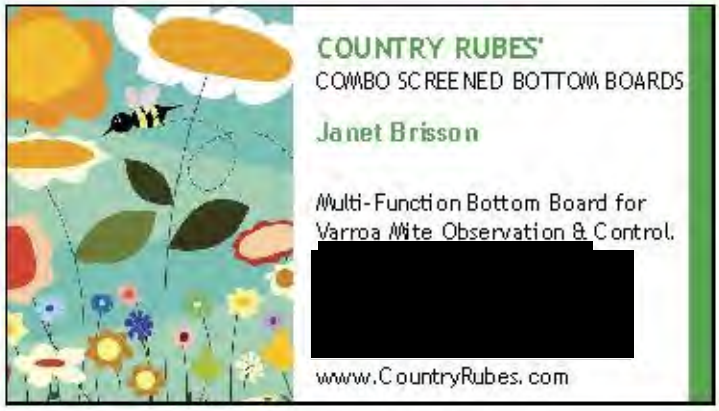
Conjunctive Use Collaboration on existing facilities, like Camp Far West, banking the water in the American River Sub-basin, eliminating evaporation and increasing supplies for emergencies and drought.

Again, I am very opposed to this project.

Janet Brisson
[redacted]

[redacted]

Janet Brisson
Country Rubes Enterprises
[redacted]



NID Response to:

Janet Brisson

Comment Noted. The Comment does not address the adequacy or accuracy of the document. NID will address more general inquiries concerning long range District planning in the Plan for Water process.

From:	Madison Jablonski-Sheffield
To:	NID Info
Subject:	No Dam on the Bear River
Date:	Thursday, March 18, 2021 5:49:35 PM

Greetings,

I am writing in opposition to the proposed Bear River Dam.

I would like all those with decision-making authority on this to take a brief moment to reflect and answer this question: if I was just making this decision on behalf of myself, my kids, grandkids, my community, and the earth, would I make the same decision as I would while getting paid in this job/role?

I hope you'll realize this is not the right choice for our community or the state in the long run. This is a harmful extractive process that has no good end.

Thank you,

Madison Sheffield

Born and raised in Nevada County

Writing in from Sacramento

NID Response to:

Madison Jablonski-Sheffield

Comment Noted. The Comment does not address the adequacy or accuracy of the document. NID will address more general inquiries concerning long range District planning in the Plan for Water process.

March 10, 2021, Workshop
2020 Agricultural Water Management Plan
Public Comments

Mikos Fabersunne:

I wanted principally to respond to this notion of what the measured flows are through farm gates and then talk, or have that blend of the notion of canal automation. I am appreciative that director Hull brought up the question about the actual flow versus what has been purchased. I think that is an important distinction because, what we are seeing, all these numbers are based on purchases, so far that I have seen. What I want to point out when you're talking about using orifice meters, the amount of flow that goes through an orifice is dependent upon the height of the water surface above it. In fact, it's proportional to the square root of that height so if the water surface level is changing, either because there's been a rainfall event or there's runoff seepage into the system, or because upper stream customers have cut off their water as Director Johansen mentioned. He'll go out sometimes of the year and turn off the water, or turn it back on because he doesn't need that flow. Well, when that happens everything downstream of that is affected so all of farm gates downstream are affected because that water level now is different. If there were more additions to the canal from runoff then the height is going to be greater, and consequently the flow is going to be greater. So to put in a statement that the accuracy of the water measurement devices is within 5 to 12 percent, I think is extremely misleading. I think that the accuracy of one measures, at one time, what the flow is through an orifice, it's probably within five percent for a set head. I imagine it's very precise depending upon how well the hole is drilled and so on. But because the fluctuation is so variable over the irrigation season, the rest of the year, it's not where it's not going to be anywhere near that. It might average out that, perhaps as you've mentioned, the demand the actual measured consumption by looking at what flows in and what flows out of the canal at the end is a good way of determining how much has been provided. But it doesn't say much for individual users. I think that if we're talking about the impacts on farmers, and we're talking about having to deal with drought in the future, it's incumbent to not only follow the intention of the Ag Water Management Planning Act of 2017 to improve system efficiency, both at the measurement levels, and with the consumption. I think those have to be controlled better, and or at least measured better. I'm going to mention now, that it talks on page 50, having NID having researched canal automation, that it claims it's going to be installing up to 10 automated control systems over 10 years that's just one a year, but budgeting for each one seems like a really high price. I think automation is something that should be considered. There's ample evidence the Oakdale Irrigation District, for one, has implemented a technology by Rubicon for feed forward, for feedback systems to control canals and everything is interconnected. So even though we don't have the same kind of system, and not everything is level here, we're also basically a downhill system, as we all know. Still there can be those measures that can be applied that

would enable farmers to dispatch their requests and have a fairly rapid response. I don't know that it would take six days to do it because it could be changed at different points in the canal. I don't want to get into the weeds on this now, but suffice it to say, I think the district really needs to take seriously the possibility of investing money into more precise control of what gets metered and delivered to Ag customers. Given that over 60 percent of the water goes to Ag. So I really I hope that the district will take that to heart. I think that if it doesn't, then we're not really taking advantage of an opportunity to save water through water efficiency. The whole thrust of that planning act is on increasing efficiency. This report, unfortunately, when it comes to what efficiency measures are being addressed, the principle one is in using shot creating of canals. We know that cost is $125,000 per mile for it; well that's not really an efficiency measure. It may cut losses, it may prevent erosion of canal sides and bottoms, but it's not really what the intention of this is. We need to be looking at efficient ways of measurement and efficient ways of control. So I encourage the board to rewrite this a little bit and make sure that we're not misleading people about these efficiency measures and then take that to heart when we go into the into the water plan phase of it that's coming up next in the Plan for Water.

John Norton:

Thank you, this has been an excellent workshop and excellent discussion. I have one overarching comment. This is called a plan by the Department of Water Resources in the legislature. In defense of NID this is more of a report than a plan, for the most part. A plan would be a detailed proposal for doing or achieving something. So for the most part, it is not a plan. On page 44, under section 108.2.6(f) it says “The agricultural water supplier shall identify, prioritize, and implement actions for reduced water loss” etcetera. I emphasize the word “shall”. I’m a former regulator and that is the term “shall identify, prioritize, and implement options”, from there the plan goes and says, “There are eight efforts that will be implemented in the near future” Almost all of these efforts say “NID will investigate.” There is no specificity, there is no timeline, there is no identifying, prioritizing and what the actions are to be implemented. I think this is too vague, and too general to comply with that “shall”. Thank you.

Ashley Overhouse:

Ashley Overhouse. I’m the policy manager with the South Yuba River Citizens League. I really want to thank the NID board and staff today, as well as Jim for preparing a fantastic presentation, taking the time to give a board workshop, and the excellent discussion that followed. Thank you, it really helped illuminate some of the more pertinent details of the plan as well as some questions and potential actions moving forward. I actually wanted to give a comment today more on the process, and the public engagement side I appreciated the clarification at the beginning of the presentation about the comment deadline, but I still have concerns now especially that any substantive written comments have to be now submitted even a day earlier. I've now lost another full day, so I have about four days starting tomorrow to submit written comments if we would like them included in the

written record, or the packet that will be submitted to the board and then to DWR. My concern is that it's not giving stakeholders or the public a lot of time. I want to make sure that you know there are a lot of people that are concerned, both members of SYRCL as well as members of our community that will want to express their own public comments. And because you have an opportunity for public comment, of course at the hearing on the 24th, is there any sort of plan to incorporate both the oral as well as written public comments that may be submitted between the 17th and the 24th in some sort of supplemental submission to DWR? I know that that kind of submission and you know the plans of compiling public comments takes quite a bit of effort. I appreciate that, and I know that that kind of job is probably already specified in the contract with Jim. I just I want to put that out there as a request, as not a suggestion, to make sure that if it's not possible to include written comment after the 16th, end of day, in the original packet, if it's possible to then include those subsequent submitted comments to DWR, or at least so the board can view them even after the public hearing altogether?
And alternatively or additionally, at least have one place where all public comment at the end of the month can be found on NID's website? It's a beautiful new website, so I also congratulate you on that. I really appreciate the Ag and Urban Water Management Plans on one page. It's much easier to find now, and if the public comments could also be located there eventually, I would appreciate that, especially with clarifying press release that you put out while we were sitting on this meeting of the updated public comment deadline of March 16. I think it would additionally be helpful if you clarified that, there was additional opportunity for NID to either revise the Ag Water Management Plan, or really clarify capture some of that comparison of the Jim articulated today, of the Ag versus Urban water management plans, even in just a short paragraph so that the public understands that the, connecting the dots, really, frankly for the purpose of the Ag Water Management Plan versus Urban, and the additional opportunities will be presented to them down the line to review that same information and the importance it will have on them as both customers and community members. I think that that's very helpful what we heard today, but may not necessarily be communicated in writing if they are not in tune, or did not listen to the meeting today. Finally, I think that publishing an explanation as to what degree the water planning projections were included in this plan would also be very helpful. I think that the confusion of the significance of the October Water Planning Projections, and then this draft Ag Water Management Plan is still very present, and I think that Jim also went over that a little bit today. So maybe capturing that and writing two to three sentences would be helpful, especially clarifying the report elements of the plan as were articulated in earlier comments versus the forward thinking elements of the plan. So the climate change modeling, the drought plan conservation, the efficient water management practices, you know some of these really key, great forward-looking elements of the plan, so that people understand what part of this is a plan for the District versus what is a report. That could just be articulated in two to three bullet points, even linking to the different pages in the plan, it would it would make all the difference, and would make readability and understanding of this really complex and technically difficult information, that much easier especially with such a short amount of time to review. I appreciate your consideration of these comments I look forward to submitting additional written comments. I really appreciate you taking the time to do this workshop today

Otis Wollan:

Thanks very much, you know I also appreciate the level of detail and the level of questions that the Board have brought to this workshop this morning. I would just, you know with regard to the “is it a plan-is it a report” all of these things, I really invite NID to actually think about it in a whole different way. I compare this draft document to your 2015 Ag plan, and there was more planning information in 2015 than there was in this document in 2020. If you compare what you have, for instance Tuolumne Irrigation District’s Ag Water Management Plan draft, which is up on their website, there's really a world of difference between those two, and a different way of looking at it. For example, in 2015 Urban Water Management Plan from PCWA, here's what they say, “Placer County Water Agency has written this Urban Water Management Plan primarily as a water resources planning tool, and secondarily, to satisfy the requirements of the Urban Water Management Plan Act, to facilitate review by DWR for compliance with the Urban Water Management Plan Act. The data from the body of this planning document has been transferred into DWR tables consistent with the organization of the law”, etcetera, and that can be found in Appendix A. The entire exercise is planning, and only secondarily is it put into a format that goes to DWR for that approval. The way that plays out is really critical. If you look at section three. The questionnaire, that is a DWR supplied questionnaire if you look at the Tuolumne Irrigation District, they look at 140,000 acres, and let's just say the one line of pasture. They only have 5,000 acres of pasture out of 140,000 acres of pasture. You have nearly 20,000 acres of pasture, out of 30,000 acres analyzed. If you add three categories, if you put forage irrigated pasture together with other, and together with family garden and orchard, you're dealing with 83 percent of your report on what you're doing, are in categories that don't tell you anything. I mean within those categories you can't tell if it's a Schedule F farm that is an actual cattle ranch or if it's an Ornamental Japanese tea garden, with a Japanese Ofuro hot tub, and a swimming pool and two acres of turf lawn, and a three-acre private a golf rink link. You have no idea what's going on behind the miners inch measuring device on 83 percent of what you're looking at. So this crop survey doesn't serve you at all. As one of your Directors pointed out earlier, what about ponds, what about, well you can guess what it is. It's not that we have two-ton trucks with farm equipment, and cattle trucks and all of that on our roads. What we have at rush hour is Audis, Lexus, and Mercedes-Benz's. When you get to what's happening here, what's mostly happening is, brand new trucks, towing brand new pickup trucks, towing brand new horse trailers. You know what it's all about and knowing what's going on informs, for instance when you do rates, your ratepayers are going to say we are 100 percent behind subsidizing agriculture for the cost of service, 100 percent. But when you say, how about Bob and Sally's hobby horse, show horse fixation, you're going to have only a percent or two. 98 percent of your people are going to say, “I don't want to subsidize that.” So it goes to rates. It goes to all of these things unless you have the tools in front of you that can actually serve you. You know when you get to section eight; there's been some discussion about how difficult it is to actually measure what's going on. You know even Director Johansen's six-miners inches. You're only actually drawing it in June, July, August, September and October. You know you got many months where you're not using any of those six-miners inches, you're using maybe 60 percent of the water that's

available to you. You can measure the water of a customer give or take 50 percent, and your surveys don't tell you a thing about what's going on beyond behind the miner's inch meter. It seems like the only thing that the staff is really certain about is that the cost is going to be way too high. It's prohibitive, and that's embedded in section 7.2 where you say “it's not locally cost effective to invest anything in agriculture customers,” because of all of these things that you don't know about. It doesn't make any sense. In the context of my engagement over the last five years with NID, there seemed to be no difficulty in embracing the concept of a new storage facility which, paid for over 50 years, would approach two billion dollars. So how can we make these assertions about the costs and the benefits, it doesn’t make sense when you don't know the benefits at all. Anyway these tools are really more important than can be stated, I mean you know one thing about neither TID nor Placer County Water Agency depend on consultants to do these exercises. All of this is done in-house so that the planning information stays with the organization. It's in-house you're working on it constantly you're continually learning and improving and refining all of this stuff. It's not a periodic consultant exercise. PCWA started a department of strategic affairs specifically to manage all of these different mandates and reports in the context of strategic planning, and in the context of ongoing planning and oversight. The Director of Strategic Affairs of the last 10 years was a guy named Andy Fecko, who ended up being the new manager. When PCWA went out there and looked at both in-house candidates and the entire market of candidates, and found that the Director of Internal Strategic Affairs for the last 10 years, was the best guy. So anyway, I invite you to look at it in a different way and to establish the internal capacity in a different way than you've taken so far. So anyway, i have more written comments and thank you again for this opportunity.

Laura Barhydt:

First, I want to, thank you again for the workshop but I really was disappointed that it was canceled for the evening because so many of us working in agriculture are not available in the daytime to participate. So I’m the only one here participating today. Again, thank you for doing this. It has clarified a lot of things for me. I did have a couple of comments I wanted to make; one was the average of 20 new Ag customers a year. I think that, to me, it's going to be low. The reason is, after COVID was here we have realized the importance of local food production. Having it here- no supply chain problems. That way if you can access it locally. We have a really strong group that is really working on increasing the availability and access to foods grown right here in Nevada County. So, I think our demand is going to grow more for the agricultural water. There are more places that are in the south county and western part of the county that, I’m sure, will be used. In addition to the demand that the cannabis industry is going to be increasing its water use. I think 20 new customers a year might
not be enough going into the future. The other thing is, how are we going to continue, excuse me I’m losing my voice here, our ag producers, as you know, they do try to practice conservation of our water, because it is expensive. We don't want to buy more than we are going to use, and a lot of times we're out towards the end of the ditch a lot of times we don't have that full head of water to get us what we need, when we need it, but most of the time we do. It's just one of those things, there's no way to totally know

exactly how much you're getting on any day. It depends on what's happening upstream I guess. Thank you for this opportunity. I have more things I will write and submit, but I'm hoping in the future you'll consider more evening meetings that will allow more people for agriculture when it's actually focused on something to do with agriculture. Thank you.

I just wanted to say thank you and to let you know that on the 17th, is the Ag Commission meeting for Nevada County. So maybe a conflict.

March 18, 2021, Workshop
2020 Agricultural Water Management Plan
Public Comments

Mr. Litton:

Okay well I first just want to thank everyone at NID. I'm very appreciative to all the work that everyone does there, and your crucial role in our in our community. I just wanted to first thank Director Hull, and Director Johansen. I really appreciated both the comments that you both just made acknowledging the adjustments that we really should do to modify our District. Also to Mr. Johansen, thank you very much for your very good point that we are really stewards of this important natural environment, and that's not only in the water that we're taking out of the rivers, but it's also in the water that we're leaving in the rivers, and the rivers that we're not damming and backing up. But I want to look at part of the draft Ag Management Plan and the section that shows that there are pastures, and the amount of water that's being put on there. The plan says there are 19,727 acres of pasture, but the plan says that 66,500 acre-feet are being delivered, That is an average of 40-inches of water are being delivered to each, on average, each of those 19,727 acres of pasture. But as you know, just like it has been discussed here; there's no way to say that with any type of accuracy, because as we've discussed, NID isn't measuring the amount of raw water. So just like Directly Hull said if that person buys 28-inches or 10-inches, whether you open them up or not, there is no way for NID to know that. So to say that for every acre that people are purchasing, forty inches, which is more than a million gallons of water, is being put on every acre within the District is really a stretch. That's 1,086 000 gallons per acre. So, while I certainly agree that in the future what we need to do is start measuring how much water is being delivered, I want to let you know that there are methods that we can use right now using the best available scientific data and that is using aerial imagery. There was a fascinating study that was done by some scientists at UC Berkeley, and they are using what is called object-based image observation. What it does is, basically, uses satellite and aerial imagery to actually measure how much of the acres are being irrigated. What's great is that they, in their scientific research, they already did this study on Nevada County, and in doing that they discovered that there were only about three-thousand-five-hundred, roughly, acres that were being irrigated in 2014. Of course, NID is representing Nevada County as well as Placer, and a little bit of Yuba County. What that data suggests is that if there's only a little more than three thousand acres that are being irrigated back in 2014, it does seem a stretch that there are 19,727 acres being irrigated with 40 inches of water per year. I would just ask that this number be investigated because there is another bit of information, which I'm pulling from the California Legislative Water Code, and that says that areas of uncultivated land, not devoted to crops should not be construed to, in any one year, to have more than two and a half acre feet of water. Because that pasture land definition is so vague within the customer survey it really is just this catch-all where people might be using that for lawns, they might be using that for horses, they might be using it just to green up their

property. I would just say that because it does seem that California is trying to mandate that these numbers are observed, or at least not extrapolated just to put a number of 40-inches per year on all of these 19,000 acres. I just think that using both this scientific analysis UC Berkeley scientists are able to use, and then also too using Lidar, which is another satellite observation to be able to really measure how much is being utilized. One fun factoid, one of those scientists, the lead scientist of the UC Berkeley study, was actually a cattle rancher here in Nevada County. I just thought it was perfect that this person has so much experience and would be a great asset for the District; we'll be able to bring him into that, and to be able to do more proper analyses because, as we all know, the customer survey is just simply inaccurate. I just want to thank you all very much for your time and I appreciate your passion for updating the District and using the best available scientific data.

Nicole Johnson:

Thank you. Ms. Hull thank you for your leadership and representation on the Board. I am not an NID, user but I do have a question about the latent water demand, if we could just circle back to that real quick. Can you tell me, and I think it was mentioned a little bit earlier, regarding if there's lack of infrastructure at a parcel with a dry well, are you including in your calculation people who are, within the next several decades, unlikely to be NID users due to that lack of infrastructure if their well does happen to go dry?

Director Bierwagen: I heard, Nicole, you can correct me, I heard you asked, “have we drawn those boundaries to exclude those areas that will never be served,” was that part of your question?

Nicole Johnson: Yes, or never, not never to be served, but at least within the next couple of decades, at least, if there is lack of infrastructure. I’m just wondering if those types of people who have private wells, if they're being included in your calculation for latent demand?

Heidi Hansen:

Hi thank you for doing this on Zoom. I really appreciate it. It's nice because I live down in Placer County, and so it's quite a ways to go up to one of your meetings. I wanted to take this opportunity because I used to serve on Placer County Farm Bureau's Board, and so I've had the NID folks come to those meetings often and listen to all you guys. One of the things that I know that is very unpopular with many of my fellow Ag folks is the thought that you guys might start metering the Ag water. I wanted to raise one little hand and say I would welcome that only because I live where it's hilly, and so I have to use an electric pump to pump my NID water. So I only irrigate in the season from April to October, about 14 hours a day. So, my example is that I know I'm subsidizing my other Ag users about ten hours a day worth of money. I know you're talking strategy, and what you're going to do long term, so there are people that would probably

welcome metering. I know it's expensive, but I've heard it in past NID discussions about that happening someday. So that's the other thing with the conversation earlier, with the gentleman talking about you guys overestimating what's going on, water on pastures, I would be one of those people because I don't water 24/7. So you're estimating too high for me, anyway, and I'm only six inches. Still six inches of water every year. Thank you.

Roger Ingram:

Good to see you Chris, and Rich, and everybody else on the Board. Just to give a little more input on the miner's inches on irrigated pastures, I run sheep with another guy. We buy miners inches to irrigate about 12 acres of irrigated pastures. Just to reiterate, usually people, if they are buying on a miner's inch basis, might be irrigating 1.3 to 2 acres of irrigated pasture with that miner's inch. The other thing I wanted to see the five years on the previous Ag Water Management Plan showed a relatively static environmental demand of like 10,700 acre feet. Is that projected to go up over the next five years, does anybody know?

So when is the FERC licensing, is it still a long ways away, or a short ways away, or what?

The third thing I wanted to point out is, and I also come from this as a background, as a University of California Cooperative Extension Livestock and Natural Resources Advisor for 31 years here in Nevada and Placer Counties, just the climate change stuff and if the FERC stuff is going to result in more water going for environmental uses. I think, as I recall from many of Chip's presentations, that in a normal year we're kind of still depositing water in the reservoirs until, maybe around the first of July, or something like that, and then drawing down from there. I guess if climate change came about and the norm became more like June 1st, or June 15th, or earlier than that, that there'd be no more inflows into the reservoirs. What would be the impact on agriculture then? I'm just throwing that out as a future thing, maybe to go a little bit more in depth on the drought stuff. Did I hear Rich Johansson correctly, when he was asking the question that irrigated pasture is not considered an irrigated crop?

Doug Roderick: It's not considered a perennial crop.

Roger Ingram: So, is there a reason why that is so?

Chip Close: It's not considered as one of the highest uses of the water during a drought. Our drought contingency plan spells out what the priority for water usage is, and we can get into that in the discussion if you would like, basically, its health, human, and livestock, and so on, and so forth. And we have set a set aside in our drought contingency plan the minimum amounts we need to satisfy those customers for the next year and that's how we determine how much water we have for the current year. It's all based on how much we can carry over into the next year for bare minimum for public health and safety needs.

Roger Ingram: I understand you got the priorities, and I've seen those priorities before, and all those types of things. All I'm trying to say is irrigated pasture predominantly is going to be made up of perennial grass, and so I guess as discussions move forward to at least keep that in mind. I can understand certain crops are not going to need as much water, but it will have a high priority. But just to always keep that irrigated pasture, at least in consideration, is what I would urge.

Brad Fowler:

I just wanted to thank you all for your consideration of agriculture, and Director Hull, you said it pretty accurately, we don't have a lot of agriculture. But the agriculture that we do have is important, and I appreciate that this agency values agriculture, and I think this board respects agriculture. I just wanted to thank you all for that, and thank you for the opportunity to have input and recognize that this water is our livelihood.

Laura Barhydt:

I'm just appalled to find out that irrigated pasture is not as important as a golf course, or a park. I'm sorry, it is perennial, and it's a huge expense for the owner to redevelop that if it is not maintained. I just want to put that out there. It really ought to be considered an irrigated crop, again I wanted to also say thank you for having this tonight and letting us have a chance to speak.

Mr. Litton:

I just wanted to say thank you very much for pointing this out, that the pasture category does seem very important, and I do think there are many important uses within that. I do want to point out though, that the irrigated pasture category is separate than the hay category and alfalfa category, so both of those which are being used for animals, those are separate from the irrigated pasture category. But I do think that this does highlight a really important fact, which is simply that the term "pasture" is used far too broadly within the survey, and I think that

it would really empower the District to specify that, and to really break that down, because I would certainly agree with our other callers who said that they have commercial-agriculture or commercial-ranching that's taking place on those pastures. But I certainly don't think that you know all of the other people who are marking “pasture”. The broad majority of the community who's marking that down, they're not farming or ranching animals. That is the category that you're going to select if you want your lawn to be green, or if you want to keep it green around your house, especially then, what that'll do, is it'll give you the power to be able to say, well we want to limit non-commercial lawns. To me that sounds much more like recreation, because if you are irrigating a place for purpose, then that's agriculture. But if you're irrigating your lawn, that's pleasure. To me that's more like recreation, so I think that splitting this up and doing the survey differently, I think that it'll give you a handle on where the water is really being used. I think a lot of that can, also in the meantime, even within the short next three or six months, that that can easily be analyzed using that satellite data. I just wanted to say thank you very much for bringing this up and I think that it's a very easy change to make. Thank you.

Roger Ingram:

On the discussion that's been taking place, the California department of food and agriculture does have a definition of ag for food and fiber, which would not include horses. I know that there was a couple that did have racehorses in the area, especially like when I first started, and

I think that is why that definition was broadened. But again, I think as you have some meetings about defining this a little bit more, maybe there would be some sort of weighting of criteria to determine if you were going to do something with irrigated pasture as a perennial crop as

far as who would get that priority, if there was going to be any priority, And also, just as at the 78,000 acre feet that is the minimum that is needed. Sure I want to encourage you to keep doing that. I wasn't around at the time, but at the drought in the 70’s, I think after the first year of the drought they didn't necessarily have a minimum, or it wasn't much, and so there was a real shortage the next year. So maintaining that critical minimum is absolutely necessary to ensure that there's going to be water for the next year. So thank you for allowing me to speak. And thank you for all you have done in getting ready for the meeting and presenting this for everyone. I appreciate it.

March 24, 2021 – Public Hearing
2020 Agricultural Water Management Plan
Public Comments

Jeff Litton:

I just want to make one quick statement, then ask a quick question. My statement is, to follow up on the points that Jim Crowley made in the previous meeting on the 18th, which is that in a very serious way NID is set at a disadvantage in its infrastructure system and that it really doesn't have a way to monitor effectively how much water is being used. As he mentioned, there are only two stations where surface outflow is being measured, so there's no way to really know how much is being used within the system. Also, there's no way to measure how much farmers are using. So within the document, they're saying it's saying that on these pasture lands that each person is using more than 40 inches of water on these 19,700 acres of pasture but without the ability to measure that, it just seems like bad data. So my point is simply that you can't make a good report with bad data, and so for that reason, I would urge the board to put in a contingency that more effective accurate monitoring practices need to be put in place before adoption. Before these numbers are used for other reports. Because there are ways that that can be done using good science. Because these surveys just are not good science in any way, shape, or form. Then that will empower the district to be able to make better management policies and practices in the future.

My question, as was noted a few minutes ago, that there was an accusation on social media of illegal actions by NID. It was a question, and it's a question that I still have. I did post on social media, stating this, reading from the Water Code, saying section item 1004, “as used in this division, useful or beneficial purposes shall not be construed to mean the use in any one year of more than two and a half acre-feet of water per acre in the irrigation of uncultivated areas of the land not devoted to cultivated crops”. So because this bad data is being used from this customer survey and people are saying that whether they're watering their lawns or whatever because that number and in this report, it's saying 40 inches. Whereas the California Code says 30-inches. I’m not accusing the district of doing something illegal, but it is a question which is, is it illegal? So I would be interested to hear the answer to that if that can be addressed in this meeting. Thank you very much I appreciate your time.

Syd Brown:

I just want to say that I’m very disappointed that the red line version that was presented just now was not available to the public. I understand that it was anticipated that there would be more changes as a result of the hearing today, however, it makes it very difficult to be effective on knowing what exactly it is we are allowed to comment on, and what is before us today. If there have been some changes made, or some changes recommended. This morning, I’m going through and comparing the comments that I

submitted, in a timely fashion, before the 16th as requested, and as I went through and was comparing the document as posted online, the current version, with my comments, and I wasted an hour seeing what wasn't incorporated. Only to find out a fair amount of my comments are recommended to be incorporated. So not having this redline version available in the packet is a problem. And I would say that, although I'm pleased that some of the typos are recommended to be corrected, the more substantive comments I made do not seem to be addressed, so I'm disappointed in that. Thank you.

Traci Sheehan:

Good morning board and public, my name is Traci Sheehan, I'm with the Foothills Water Network. I want to start off by thanking the Board for these additional public hearings, both the Board and Staff. This is a big change from past processes. Usually, there's just one meeting like today where you get public comment and then you approve the plan, so it's great that you've had these additional meetings, especially the nighttime one. The network believes it's critical for the public to understand the details and assumptions in all of these plans. Especially because this plan is one of those first steps towards the Plan for Water in the end. This is where the public is getting a better understanding of the data that NID is using in the assumptions. So to be clear, this water management plan is actually the second step in that process, we started with the Plan or Water with the water planning projections in October. I believe it's critical that NID use accurate data and modeling so that the public can understand both our current water needs and our future water needs. I can tell you from the planning projection numbers, we wrote extensive comments on the fact that the public, and we don't understand those numbers. Our October comments point out fundamental problems and omissions with both demand and supply, and with this plan and report that's come out, we remain concerned about recent data and modeling in the projections because they were incomplete, and they seemed to inflate demand. At that time and during that process, we requested we meet with NID to discuss these issues, and we're disappointed that that didn't happen before this plan. But with a great warning about the importance of the Urban Water Management Plan, I think that I'm optimistic that we can meet with NID before the Urban Water Management Plan to address these critical issues.

Okay, so now here are a few specifics. First, we believe that the Agricultural Water Management Plan needs a precipitation table. We're concerned with the climate change analysis that suggests major water shortages in the future. So with five years of drought, NID's climate modeling shows that the watershed would become significantly impacted with a 50 to 75 percent reduction in runoff. It's important to understand that this is a much greater impact than actually occurred during the severe drought in 2011-2014. The methods for those projections are not described, nor are the assumptions in the modeling. So, the Network recommends that NID add a table with the dates of the water years used in these projections, along with the total precipitation of each of these water years. Without that information, the reader is forced to conclude that the analysis itself is not presented appropriately, or that there is reason to cover up the methods and assumptions. And because annual precipitation is a fundamental component of the water budgeting process and is included in DWR's handbook, the Network requests NID add a table with precipitation in each water year type. Another point just came up about

the sub-basins, and it was an edit that happened in table 6-1. The network's question is why didn't the plan include all of the sub-basins? So that is a remaining question that we have. All in all, I believe that it's just critical that before NID venture further down the road towards the Plan for Water, that the modeling and data gaps are completed. You'll see those in our comments. In summary, today we ask that if there are remaining omissions that they get fixed before you adopt this plan. Fix what you can before the deadline, and I know that Syd has prepared, and the Network prepared comments that include what those omissions are. We suggest then you set up a special Board meeting so that you can actually adopt the plan. I also suggest two other things, coming out of Greg's comments this morning. First, or at the beginning of this, is that I do agree that it's a good idea for NID to come back and respond to the different comments in writing, and at a future Board meeting. Then we could have a better understanding of some of the assumptions behind the modeling. It's a way to start the conversation as we move towards the Urban Water Management Plan. I also asked the board to consider how will you commit to some of what you're planning in the future in the resolution that you'll be adopting today, so as we watch the board discuss this and consider next steps, what should be included in that resolution to make sure that the public understands what your next steps are? Thank you.

Ashley Overhouse:

Thank you so much, again this is Ashley Overhouse. I'm the policy manager with the South Yuba River Citizens League, SYRCL. As a member of the foothills water network, we submitted comments on this draft plan before you today, and you can find those starting on page 85 of the pdf that was presented to the Board, and available to the public.

Today, the NID board will consider whether to formally adopt the plan before submitting it to the California Department of Water Resources. While SYRCL is grateful, and echo the Network's comments, that NID gave additional opportunity for the public, we are still concerned that the plan is fundamentally flawed due to its incorporation of the water planning projections from October 2020, and seemingly inflated demand. I would just like to echo Traci's requests that the NID Board, please do not approve the plan as currently drafted, even with the adjustments made today. And thank you for those. We would appreciate responses to the comments at some later date, whether that's before or after adoption. I think that would help both the Network, as well as the public, truly understand the assumptions that were put in the plan. Today, at a minimum, this means additional explanation for methodology. I appreciate that one sentence that was added in terms of discrepancy of sub-basins, but I would appreciate additional explanation, as well as the annual precipitation for water years used in the water management plan, as Traci Sheehan just previously mentioned. A special Board meeting, if needed, before April 1, to adopt the amended plan. Finally, we request, respectfully, that the Board, through a resolution or some other formal action, revisit NID's methodology for drafting and producing water management plans in the context of improving overall District planning for a sustainable water future, before the Plan for Water process begins in Fall 2021.

I really do want to thank Greg for clarifying the intent, purpose, and scope of this Ag Water Management Plan, here before you, at the beginning of this public hearing. I really do appreciate that some of this could be addressed in the Urban Water Management Plan, and I would appreciate the opportunity to do so. I do think that this plan, and the work that has been put into it thus far, is still an important tool to help NID improve efficiencies in the future. And provide information and a record to the public on the District's stewardship of our precious water resources. And that the Ag Water Management Plan and Urban Water Management Plans are two important components that will inform the District's update to the Raw Water Master Plan. I understand that that really is the critical tool for strategic planning into the future, and I look forward to engaging in that process. I also want to thank Jim Crowley for the messages today on the water management objectives to focus on the future for the District. Those bullet points, I think, are just incredibly important. And thank his statement for saying there's a lot of energy around how watershed management can help increase community resiliency in the face of the climate crisis. I think that that is really, truly why we are all here today discussing this, and SYRCL thanks you for that intention as you move forward. Thank you so much for your time.

Matthew

I just want you to consider that water is something there is nobody that I know of, that I've ever met, that can go without for more than just three days. So, the responsibility to manage the water is a life and death situation. And that what you're tasked with affects everyone. Every living thing on this earth really depends on water. So please just take it seriously. If you can't remember what it feels like to go without water, just try it for 24 hours. It's excruciating, and it's like torture. That's all I really have to say, is just take your position seriously and realize that we all can't go without it no matter how hard we want to try, thank you.

Entities who received Notification Letter

Nevada County
Placer County
Yuba County
City of Grass Valley
City of Nevada City
City of Lincoln
Placer County Water Agency
Yuba Water Agency

6 B Estates Water Association
Ali Lane Mutual Water Association
Big Oak Valley Mutual Water Company
Blackford Ranch Water Association
Carmody Special Water District
Chicago Park Water Association
Chili Hill Farms Water Association
Clear Creek Water Association
Cole Country Water Users Association
Countryside Ranch Water Association
Fawn Hill Drive Water Association
Flying R Ranch Water Association
Footehold Estates Water Association
Gold Blossom-Rivera Mutual Water Association
Greenpeace Water Association
HDA Association
Iron Mountain Mutual Water Company
Lake Vera Mutual Water Company
Little Greenhorn Creek Water Association
Meadow Hill Water Association
Melody Oaks Mutual Water Company
Moonshine Water Company
Mount Vernon Estates Mutual Water Company
Mustang Valley Mutual Water Company
Oakcreek Water Association
Ophir Prison Estates Mutual Water
Perimeter Road Pipeline
Quail Hill Acres Rd & Water Systems Association
Redbud Water Association
Ridge View Woodlands Mutual Water Company
Rough & Ready Ranch Estates Mutual Water Company
Rudd Road Pipeline Association
Running Water Inc.
Saddleback North Water Group
Saddleback Water Association
Sierra Foothills Water Association
Sky Pines Mutual Water Association
Streeter Road Water Association
Vian Water Association
Wilkes Pipeline Association

Nevada Irrigation District

Water for Life

December 11, 2020

Jennifer Hanson,City Manager
City of Lincoln
600 6th Street
Lincoln, CA 95648

Dear Jennifer Hanson,

The Nevada Irrigation District (NID) has begun the process of updating its Agricultural Water Management Plan (AWMP) and its Urban Water Management Plan (UWMP) as required by the California Water Code. Because NID is both a municipal drinking water supplier and an agricultural raw water supplier, it is completing both documents which are required to be updated every five years.

The Agricultural Water Management Plan requires an agricultural water provider to present information about its agricultural water customers, water usage, conservation efforts, and other management elements. The AWMP must be adopted by the NID Board of Directors by April 1, 2021.

The Urban Water Management Plan requires all municipal water providers to project its supply and demand over the next 20 years, describe its conservation efforts and impacts, consider drought impacts, describe its water shortage contingency plan, consider indoor and outdoor water budgets, as well as other elements to report progress. The plan is a summary of the water provider's key performance indicators for the next 20 years to support its capabilities to meet customer's demands. The UWMP must be adopted by the NID Board of Directors by July 1, 2021.

NID is notifying you, our customers, and other stakeholders that we have initiated our 2020 AWMP and UWMP update process. As part of the process, NID will hold two public meetings for each plan in the spring to allow public review prior to Board consideration.

Please contact me if you have any questions regarding this notification or NID's AWMP and UWMP update process.

Sincerely,

Doug Roderick, P.E.
Interim Engineering Manager

Nevada Irrigation District

Water for Life

December 11, 2020

Catrina Olson,City Manager
City of Nevada City
317 Broad Street
Nevada City, CA 95959

Dear Catrina Olson,

The Nevada Irrigation District (NID) has begun the process of updating its Agricultural Water Management Plan (AWMP) and its Urban Water Management Plan (UWMP) as required by the California Water Code. Because NID is both a municipal drinking water supplier and an agricultural raw water supplier, it is completing both documents which are required to be updated every five years.

The Agricultural Water Management Plan requires an agricultural water provider to present information about its agricultural water customers, water usage, conservation efforts, and other management elements. The AWMP must be adopted by the NID Board of Directors by April 1, 2021.

The Urban Water Management Plan requires all municipal water providers to project its supply and demand over the next 20 years, describe its conservation efforts and impacts, consider drought impacts, describe its water shortage contingency plan, consider indoor and outdoor water budgets, as well as other elements to report progress. The plan is a summary of the water provider's key performance indicators for the next 20 years to support its capabilities to meet customer's demands. The UWMP must be adopted by the NID Board of Directors by July 1, 2021.

NID is notifying you, our customers, and other stakeholders that we have initiated our 2020 AWMP and UWMP update process. As part of the process, NID will hold two public meetings for each plan in the spring to allow public review prior to Board consideration.

Please contact me if you have any questions regarding this notification or NID's AWMP and UWMP update process.

Sincerely,

Doug Roderick, P.E.
Interim Engineering Manager

Nevada Irrigation District

Water for Life

December 11, 2020

Tim M. Kiser,City Manager
City of Grass Valley
125 East Main Street
Grass Valley, CA 95945

Dear Tim M. Kiser,

The Nevada Irrigation District (NID) has begun the process of updating its Agricultural Water Management Plan (AWMP) and its Urban Water Management Plan (UWMP) as required by the California Water Code. Because NID is both a municipal drinking water supplier and an agricultural raw water supplier, it is completing both documents which are required to be updated every five years.

The Agricultural Water Management Plan requires an agricultural water provider to present information about its agricultural water customers, water usage, conservation efforts, and other management elements. The AWMP must be adopted by the NID Board of Directors by April 1, 2021.

The Urban Water Management Plan requires all municipal water providers to project its supply and demand over the next 20 years, describe its conservation efforts and impacts, consider drought impacts, describe its water shortage contingency plan, consider indoor and outdoor water budgets, as well as other elements to report progress. The plan is a summary of the water provider's key performance indicators for the next 20 years to support its capabilities to meet customer's demands. The UWMP must be adopted by the NID Board of Directors by July 1, 2021.

NID is notifying you, our customers, and other stakeholders that we have initiated our 2020 AWMP and UWMP update process. As part of the process, NID will hold two public meetings for each plan in the spring to allow public review prior to Board consideration.

Please contact me if you have any questions regarding this notification or NID's AWMP and UWMP update process.

Sincerely,

Doug Roderick, P.E.
Interim Engineering Manager

Nevada Irrigation District

Water for Life

December 11, 2020

Kevin Mallen,CAO
Yuba County
915 Eighth Street #115
Marysville, CA 95901

Dear Kevin Mallen,

The Nevada Irrigation District (NID) has begun the process of updating its Agricultural Water Management Plan (AWMP) and its Urban Water Management Plan (UWMP) as required by the California Water Code. Because NID is both a municipal drinking water supplier and an agricultural raw water supplier, it is completing both documents which are required to be updated every five years.

The Agricultural Water Management Plan requires an agricultural water provider to present information about its agricultural water customers, water usage, conservation efforts, and other management elements. The AWMP must be adopted by the NID Board of Directors by April 1, 2021.

The Urban Water Management Plan requires all municipal water providers to project its supply and demand over the next 20 years, describe its conservation efforts and impacts, consider drought impacts, describe its water shortage contingency plan, consider indoor and outdoor water budgets, as well as other elements to report progress. The plan is a summary of the water provider's key performance indicators for the next 20 years to support its capabilities to meet customer's demands. The UWMP must be adopted by the NID Board of Directors by July 1, 2021.

NID is notifying you, our customers, and other stakeholders that we have initiated our 2020 AWMP and UWMP update process. As part of the process, NID will hold two public meetings for each plan in the spring to allow public review prior to Board consideration.

Please contact me if you have any questions regarding this notification or NID's AWMP and UWMP update process.

Sincerely,

Doug Roderick, P.E.
Interim Engineering Manager

Nevada Irrigation District

Water for Life

December 11, 2020

Todd Leopold,CEO
Placer County
775 North Lake Blvd.
Tahoe City, CA 96145

Dear Todd Leopold,

The Nevada Irrigation District (NID) has begun the process of updating its Agricultural Water Management Plan (AWMP) and its Urban Water Management Plan (UWMP) as required by the California Water Code. Because NID is both a municipal drinking water supplier and an agricultural raw water supplier, it is completing both documents which are required to be updated every five years.

The Agricultural Water Management Plan requires an agricultural water provider to present information about its agricultural water customers, water usage, conservation efforts, and other management elements. The AWMP must be adopted by the NID Board of Directors by April 1, 2021.

The Urban Water Management Plan requires all municipal water providers to project its supply and demand over the next 20 years, describe its conservation efforts and impacts, consider drought impacts, describe its water shortage contingency plan, consider indoor and outdoor water budgets, as well as other elements to report progress. The plan is a summary of the water provider's key performance indicators for the next 20 years to support its capabilities to meet customer's demands. The UWMP must be adopted by the NID Board of Directors by July 1, 2021.

NID is notifying you, our customers, and other stakeholders that we have initiated our 2020 AWMP and UWMP update process. As part of the process, NID will hold two public meetings for each plan in the spring to allow public review prior to Board consideration.

Please contact me if you have any questions regarding this notification or NID's AWMP and UWMP update process.

Sincerely,

Doug Roderick, P.E.
Interim Engineering Manager

Nevada Irrigation District

Water for Life

December 11, 2020

Allison Lehman,CEO
Nevada County
950 Maidu Avenue
Nevada City, CA 95969

Dear Allison Lehman,

The Nevada Irrigation District (NID) has begun the process of updating its Agricultural Water Management Plan (AWMP) and its Urban Water Management Plan (UWMP) as required by the California Water Code. Because NID is both a municipal drinking water supplier and an agricultural raw water supplier, it is completing both documents which are required to be updated every five years.

The Agricultural Water Management Plan requires an agricultural water provider to present information about its agricultural water customers, water usage, conservation efforts, and other management elements. The AWMP must be adopted by the NID Board of Directors by April 1, 2021.

The Urban Water Management Plan requires all municipal water providers to project its supply and demand over the next 20 years, describe its conservation efforts and impacts, consider drought impacts, describe its water shortage contingency plan, consider indoor and outdoor water budgets, as well as other elements to report progress. The plan is a summary of the water provider's key performance indicators for the next 20 years to support its capabilities to meet customer's demands. The UWMP must be adopted by the NID Board of Directors by July 1, 2021.

NID is notifying you, our customers, and other stakeholders that we have initiated our 2020 AWMP and UWMP update process. As part of the process, NID will hold two public meetings for each plan in the spring to allow public review prior to Board consideration.

Please contact me if you have any questions regarding this notification or NID's AWMP and UWMP update process.

Sincerely,

Doug Roderick, P.E.
Interim Engineering Manager

Nevada Irrigation District

Water for Life

December 11, 2020

Andy Fecko,General Manager
Placer County Water Agency
P.O. Box 6570
Auburn, CA 95604

Dear Andy Fecko,

The Nevada Irrigation District (NID) has begun the process of updating its Agricultural Water Management Plan (AWMP) and its Urban Water Management Plan (UWMP) as required by the California Water Code. Because NID is both a municipal drinking water supplier and an agricultural raw water supplier, it is completing both documents which are required to be updated every five years.

The Agricultural Water Management Plan requires an agricultural water provider to present information about its agricultural water customers, water usage, conservation efforts, and other management elements. The AWMP must be adopted by the NID Board of Directors by April 1, 2021.

The Urban Water Management Plan requires all municipal water providers to project its supply and demand over the next 20 years, describe its conservation efforts and impacts, consider drought impacts, describe its water shortage contingency plan, consider indoor and outdoor water budgets, as well as other elements to report progress. The plan is a summary of the water provider's key performance indicators for the next 20 years to support its capabilities to meet customer's demands. The UWMP must be adopted by the NID Board of Directors by July 1, 2021.

NID is notifying you, our customers, and other stakeholders that we have initiated our 2020 AWMP and UWMP update process. As part of the process, NID will hold two public meetings for each plan in the spring to allow public review prior to Board consideration.

Please contact me if you have any questions regarding this notification or NID's AWMP and UWMP update process.

Sincerely,

Doug Roderick, P.E.
Interim Engineering Manager

Nevada Irrigation District

Water for Life

December 11, 2020

Willlie Whittlesey,General Manager
Yuba Water Agency
1220 F Street
Marysville, CA 95901

Dear Willlie Whittlesey,

The Nevada Irrigation District (NID) has begun the process of updating its Agricultural Water Management Plan (AWMP) and its Urban Water Management Plan (UWMP) as required by the California Water Code. Because NID is both a municipal drinking water supplier and an agricultural raw water supplier, it is completing both documents which are required to be updated every five years.

The Agricultural Water Management Plan requires an agricultural water provider to present information about its agricultural water customers, water usage, conservation efforts, and other management elements. The AWMP must be adopted by the NID Board of Directors by April 1, 2021.

The Urban Water Management Plan requires all municipal water providers to project its supply and demand over the next 20 years, describe its conservation efforts and impacts, consider drought impacts, describe its water shortage contingency plan, consider indoor and outdoor water budgets, as well as other elements to report progress. The plan is a summary of the water provider's key performance indicators for the next 20 years to support its capabilities to meet customer's demands. The UWMP must be adopted by the NID Board of Directors by July 1, 2021.

NID is notifying you, our customers, and other stakeholders that we have initiated our 2020 AWMP and UWMP update process. As part of the process, NID will hold two public meetings for each plan in the spring to allow public review prior to Board consideration.

Please contact me if you have any questions regarding this notification or NID's AWMP and UWMP update process.

Sincerely,

Doug Roderick, P.E.
Interim Engineering Manager

Entities who received Press Release

Wildlife.ca/gov
USDA.gov
Yubariver.org
Placer County Agricultural Commissioner
Nevada County Agricultural Commissioner
Nevada County Farm Bureau
Placer County Farm Bureau
LWWA.org
Sen.ca
wildlife.ca.org
The Union
Bear Yuba Land Trust (BYLT)
NID Agricultural Customers

Contact: Tomi Riley
(530) 271-6845
Rileyt@nidwater.com

FOR IMMEDIATE RELEASE

NID Preparing Agricultural and Urban Water Management Plans Due to the State in 2021

(Grass Valley, CA December 11, 2020) – The Nevada Irrigation District (NID) is preparing its 2020 Agricultural Water Management Plan (AWMP) and 2020 Urban Water Management Plan (UWMP) as required by the California Water Code. Because NID is both a municipal drinking water supplier and an agricultural raw water supplier it submits both documents.

The Urban Water Management Plan (UWMP) requires all municipal water providers to project its supply and demand over the next 20 years, describe its conservation efforts and impacts, consider drought impacts, describe its water shortage contingency plan, consider indoor and outdoor water budgets, as well as other elements to report progress. The plan is functionally a summary of the water provider's key performance indicators for the next 20 years to support its capabilities to meet its customer's demands. The plan is due to the state every five years, with the next plan due June 30, 2021.

The Agricultural Water Management Plan (AWMP) is similar to the Urban Water Management Plan as both are state-mandated reports due every five years. The AWMP requires an agricultural water provider to present information about its agricultural water customers, water usage, conservation efforts, and other management elements. The AWMP is also due to the state every five years, with the next plan due July 1, 2021.

NID wants our customers and other stakeholders to know that NID has initiated its 2020 AWMP and UWMP update process. As part of the process, NID will hold two public meetings for each plan to allow public input prior to Board adoption consideration. Draft copies of each plan will be available for review in the spring of 2021.

For additional information about the Nevada Irrigation District's AWMP and UWMP update process, please visit NIDwater.com

LEGAL DISPLAY PROOF OF PUBLICATION (2015.5 C.C.P.)

STATE OF CALIFORNIA
County of Placer

I am a citizen of the United States and employed by a publication in the County foresaid. I am over the age of eighteen years, and not a party to the below mentioned matter. I am the principal clerk of **The Auburn Journal**, a newspaper of general circulation, which is printed and published in the **City of Auburn, County of Placer**. This newspaper has been judged a newspaper of general circulation by the Superior Court of the State of California, in and for the County of Placer, on the date of May 26, 1952 (Case Number 17407). The notice, of which the attached is a printed copy (set in type not smaller than nonpareil) has been published in each regular and entire issue of said newspaper and not in any supplement thereof on the following dates, to-wit:

74671

THE NEVADA IRRIGATION DISTRICT
NOTICE OF PUBLIC HEARING

PUBLICATION DATE / DATES:

MARCH 10, 17

I certify, under penalty of perjury, that the foregoing is true and correct.

Signature
TERRY CLARK

Dated in Auburn, California

MARCH 17, 2021

74671

The Nevada Irrigation District
Notice of Public Hearing on the
2020 Agricultural Water Management Plan
Wednesday, March 24 at 9:00 a.m.
Via Zoom

The California Water Code requires that agricultural water providers prepare an Agricultural Water Management Plan (AWMP) every five years. The report includes information about the Nevada Irrigation District's (NID) roughly 5,600 agricultural customers such as past water usage, conservation efforts, and other management elements. The 2020 AWMP must be adopted by the NID Board of Directors by April 1, 2021 and is due to the State within 30 days of adoption.

About ninety percent of all the water delivered by NID is for agricultural use giving life to approximately 32,000 acres of irrigated land in Nevada and Placer Counties. Most agricultural water customers purchase water seasonally, from mid-April through mid-October. NID's raw water is conveyed to customers through a unique network of over 500 miles of canal and is used to grow multiple crops including wine grapes, nursery stock, apples, rice, plums, citrus, grass, alfalfa hay, as well as to irrigate pasture.

Due to COVID-19, the meeting will be held via Zoom. Full details and instructions for how to access the meeting will be provided on the Board meeting agenda posted to **nidwater.com** at least 72 hours before the meeting.

The draft 2020 Agricultural Water Management Plan is available for review on NID's website at **https://www.nidwater.com/ag-urban-water-management-plans**.

PUBLISHED IN AUBURN JOURNAL: MARCH 10, 17, 2021

PROOF OF PUBLICATION
AUBURN JOURNAL

74682

LEGAL DISPLAY PROOF OF PUBLICATION (2015.5 C.C.P.)

STATE OF CALIFORNIA
County of Placer

I am a citizen of the United States and employed by a publication in the County foresaid. I am over the age of eighteen years, and not a party to the below mentioned matter. I am the principal clerk of The Lincoln News Messenger, a newspaper of general circulation, which is printed and published in the City of Lincoln, County of Placer. This newspaper has been judged a newspaper of general circulation by the Superior Court of the State of California, in and for the County of Placer, on the date of November 13, 1951, Superior Court Order Number 16996). The notice, of which the attached is a printed copy (set in type not smaller than nonpareil) has been published in each regular and entire issue of said newspaper and not in any supplement thereof on the following dates, to-wit:

74682

THE NEVADA IRRIGATION DISTRICT
NOTICE OF PUBLIC HEARING

PUBLICATION DATE / DATES:

MARCH 11, 18

I certify, under penalty of perjury, that the foregoing is true and correct.

Signature
TERRY CLARK

Dated in Lincoln, California
MARCH 18, 2021

74682

The Nevada Irrigation District
Notice of Public Hearing on the
2020 Agricultural Water Management Plan
Wednesday, March 24 at 9:00 a.m.
Via Zoom

The California Water Code requires that agricultural water providers prepare an Agricultural Water Management Plan (AWMP) every five years. The report includes information about the Nevada Irrigation District's (NID) roughly 5,600 agricultural customers such as past water usage, conservation efforts, and other management elements. The 2020 AWMP must be adopted by the NID Board of Directors by April 1, 2021 and is due to the State within 30 days of adoption.

About ninety percent of all the water delivered by NID is for agricultural use giving life to approximately 32,000 acres of irrigated land in Nevada and Placer Counties. Most agricultural water customers purchase water seasonally, from mid-April through mid-October. NID's raw water is conveyed to customers through a unique network of over 500 miles of canal and is used to grow multiple crops including wine grapes, nursery stock, apples, rice, plums, citrus, grass, alfalfa hay, as well as to irrigate pasture.

Due to COVID-19, the meeting will be held via Zoom. Full details and instructions for how to access the meeting will be provided on the Board meeting agenda posted to **nidwater.com** at least 72 hours before the meeting.

The draft 2020 Agricultural Water Management Plan is available for review on NID's website at **https://www.nidwater.com/ag-urban-water-management-plans**.

PUBLISHED IN LINCOLN NEWS MESSENGER : MARCH 11, 18, 2021

PROOF OF PUBLICATION
LINCOLN NEWS MESSENGER

Appendix B: 2020 AWMP Adopted Resolution

To be inserted upon final

Appendix C: DWR Plan Review Checklist

Public Draft version using 2015 checklist until 2020 version is finalized by DWR

AWMP Location	Guidebook Location	Description	Water Code Section (or as identified)
Section 1.1	1.4	AWMP Required?	10820, 10608.12
Table 2-1 Table 3-2	1.4	At least 25,000 irrigated acres	10853
n/a	1.4	10,000 to 25,000 acres and funding provided	10853
Section 1.1	1.4	April 1, 2021 update	10820 (a)
Section 1.4	1.4 A.2	**Added to the Water Code:** AWMP submitted to DWR no later than 30 days after adoption; AWMP submitted electronically	**New to the Water Code:** 10820(a)(2)(B)
Section 1.1	1.4 B	5-year cycle update	10820 (a)
n/a	1.4 B	New agricultural water supplier after December 31, 2012 - AWMP prepared and adopted within 1 year	10820 (b)
n/a	1.6, 5	USBR water management/conservation plan:	10828(a)
n/a	1.6, 5.1	Adopted and submitted to USBR within the previous four years, AND	10828(a)(1)
n/a	1.6, 5.1	The USBR has accepted the water management/conservation plan as adequate	10828(a)(2)
n/a	1.4.B	UWMP or participation in area wide, regional, watershed, or basin wide water management planning: does the plan meet requirements of SB X7-7 2.8	10829
Section 1.2	3.1 A	Description of previous water management activities	10826(d)
Section 1.3.1 Table 1-1	3.1 B.1	Was each city or county within which supplier provides water supplies notified that the agricultural water supplier will be preparing or amending a plan?	10821(a)
Section 1.3.2	3.2 B.2	Was the proposed plan available for public inspection prior to plan adoption?	10841
Section 1.3.2	3.1 B.2	Publicly-owned supplier: Prior to the hearing, was the notice of the time and place of hearing published within the jurisdiction of the publicly owned agricultural water supplier in accordance with Government Code 6066?	10841
Section 1.3.2	3.1 B.2	14 days notification for public hearing	GC 6066
Section 1.3.2	3.1 B.2	Two publications in newspaper within those 14 days	GC 6066
Section 1.3.2	3.1 B.2	At least 5 days between publications? (not including publication date)	GC 6066

AWMP Location	Guidebook Location	Description	Water Code Section (or as identified)
n/a	3.1 B.2	Privately-owned supplier: was equivalent notice within its service area and reasonably equivalent opportunity that would otherwise be afforded through a public hearing process provided?	10841
Section 1.3.2	3.1 C.1	After hearing/equivalent notice, was the plan adopted as prepared or as modified during or after the hearing?	10841
Section 1.4	3.1 C.2	Was a copy of the AWMP, amendments, or changes, submitted to the entities below, no later than 30 days after the adoption?	10843(a)
Section 1.4	3.1 C.2	The department.	10843(b)(1)
Section 1.4	3.1 C.2	Any city, county, or city and county within which the agricultural water supplier provides water supplies.	10843(b)(2)
n/a	3.1 C.2	Any groundwater management entity within which jurisdiction the agricultural water supplier extracts or provides water supplies.	10843(b)(3)
Section 1.4	3.1 C.3	Adopted AWMP availability	10844
Section 1.4	3.1 C.3	Was the AWMP available for public review on the agricultural water supplier's Internet Web site within 30 days of adoption?	10844(a)
n/a	3.1 C.3	If no Internet Web site, was an electronic copy of the AWMP submitted to DWR within 30 days of adoption?	10844(b)
Section 1.5	3.1 D.1	Implement the AWMP in accordance with the schedule set forth in its plan, as determined by the governing body of the agricultural water supplier.	10842
Section 2 (and subsections)	3.3	Description of the agricultural water supplier and service area including:	10826(a)
Section 2.1 Section 2.2.1 Table 2-1	3.3 A.1	Size of the service area.	10826(a)(1)
Figure 2-1	3.3 A.2	Location of the service area and its water management facilities.	10826(a)(2)
Section 2.1.1	3.3 A.3	Terrain and soils.	10826(a)(3)
Section 2.1.2 Table 2-7	3.3 A.4	Climate.	10826(a)(4)
Section 2.2.1 Table 2-8 Table 2-9 Table 2-10	3.3 B.1	Operating rules and regulations.	10826(a)(5)
Section 2.2.2	3.3 B.2	Water delivery measurements or calculations.	10826(a)(6)

AWMP Location	Guidebook Location	Description	Water Code Section (or as identified)
Section 2.2.3 Table 2-12 Table 2-13 Table 2-14	3.3 B.3	Water rate schedules and billing.	10826(a)(7)
Section 2.3.4	3.3 B.4	Water shortage allocation policies and detailed drought plan	10826(a)(8) 10826.2
Section 3 (and subsections)	3.4	Water uses within the service area, including all of the following:	10826(b)(5)
Section 3.1 Table 3-1	3.4 A	Agricultural.	10826(b)(5)(A)
Section 3.2 Table 3-3	3.4 B	Environmental.	10826(b)(5)(B)
Section 3.3 Table 3-4	3.4 C	Recreational.	10826(b)(5)(C)
Section 3.4 Table 3-5	3.4 D	Municipal and industrial.	10826(b)(5)(D)
Section 3.5	3.4 E	Groundwater recharge, including estimated flows from deep percolation from irrigation and seepage	10826(b)(5)(E)
Section 4 (and subsections)	3.5 A	Description of the quantity of agricultural water supplier's supplies as:	10826(b)
Section 4.1 (and subsections) Table 4-1	3.5 A.1	Surface water supply.	10826(b)(1)
Section 4.2	3.5 A.2	Groundwater supply.	10826(b)(2)
Section 4.3 Section 4.4	3.5 A.3	Other water supplies, including recycled water	10826(b)(3)
Section 4.5 Table 4-4	3.5 A.4	Drainage from the water supplier's service area.	10826(b)(6)
Section 4.6 (and subsections)	3.5 B	Description of the quality of agricultural waters suppliers supplies as:	10826(b)
Section 4.6.1 Table 4-5	3.5 B.1	Surface water supply.	10826(b)(1)
Section 4.6.2	3.5 B.2	Groundwater supply.	10826(b)(2)
Section 4.6.3 Section 4.6.4	3.5 B.3	Other water supplies.	10826(b)(3)
Section 4.7 Table 4-6	3.5 C	Source water quality monitoring practices.	10826(b)(4)
Section 5 (and subsections) Table 5-1 Table 5-2	3.6	**Added to Water Code:** Annual water budget based on the quantification of all inflow and outflow components for the service area.	**Added to Water Code** 10826(c)
Section 5.3	3.7 C	**Added to Water Code:** Identify water management objectives based on water budget to improve water system efficiency	**Added to Water Code** 10826(f)
Section 5.4 Table 5-3	3.8 D	**Added to Water Code** Quantify the efficiency of agricultural water use	**Added to Water Code** 10826(h)

AWMP Location	Guidebook Location	Description	Water Code Section (or as identified)
Section 6 (and subsections)	3.9	Analysis of climate change effect on future water supplies analysis	10826(d)
Section 7 (and subsections)	4	Water use efficiency information required pursuant to §10608.48.	10826(e)
Section 7.1	4.1	Implement efficient water management practices (EWMPs)	10608.48(a)
Section 7.2.1	4.1 A	Implement Critical EWMP: Measure the volume of water delivered to customers with sufficient accuracy to comply with subdivision (a) of § 531.10 and to implement paragraph (2).	10608.48(b)
Section 7.2.2	4.1 A	Implement Critical EWMP: Adopt a pricing structure for water customers based at least in part on quantity delivered.	10608.48(b)
Section 7..3	4.1 B	Implement additional locally cost-effective and technically feasible EWMPs	10608.48(c)
Section 7.4 Table 7-2	4.1 C	If applicable, document (in the report) the determination that EWMPs are not locally cost- effective or technically feasible	10608.48(d)
Section 7.1 Table 7-1	4.1 C	Include a report on which EWMPs have been implemented and planned to be implemented	10608.48(d)
Section 7.1	4.1 C	Include (in the report) an estimate of the water use efficiency improvements that have occurred since the last report, and an estimate of the water use efficiency improvements estimated to occur five and 10 years in the future.	10608.48(d)
n/a	5	USBR water management/conservation plan may meet requirements for EWMPs	10608.48(f)
n/a	6 A	Lack of legal access certification (if water measuring not at farm gate or delivery point)	CCR §597.3(b)(2)(A)
n/a	6 B	Lack of technical feasibility (if water measuring not at farm gate or delivery point)	CCR §597.3(b)(1)(B), §597.3(b)(2)(B)
n/a	6 A, 6 B	Delivery apportioning methodology (if water measuring not at farm gate or delivery point)	CCR §597.3.b(2)(C),
Section 8.3	6 C	Description of water measurement BPP	CCR §597.4(e)(2)
Section 7.2.1 Section 8.4	6 D	Conversion to measurement to volume	CCR §597.4(e)(3)
n/a	6 E	Existing water measurement device corrective action plan? (if applicable, including schedule, budget and finance plan)	CCR §597.4(e)(4))

Appendix D: Nevada Irrigation District Water Service Regulations and Schedules (dated September 18, 2020)

NEVADA IRRIGATION DISTRICT
WATER SERVICE REGULATIONS
TABLE OF CONTENTS

(Click on the section number highlighted in blue to go to the beginning of that section)

SECTION 1

INTRODUCTION

1.01 PURPOSE AND HISTORY OF DISTRICT

The Nevada Irrigation District was formed August 15, 1921, by a vote of the people to collect, store and deliver irrigation water to farmers and ranchers. The District now encompasses approximately 287,000 acres and provides both agricultural and treated water to connections that will soon reach 25,000 due to projected growth increases.

eff. 6/11/03

1.02 WATER SUPPLY AND FACILITIES

The District's water supply originates in the upper reaches of the middle and south Yuba River as well as from the Bear River and Deer Creek waterflows. The District owns 10 storage reservoirs containing a capacity of 280,380 acre-feet. Treated water facilities include 8 treatment plants, 39 storage tanks and 325 miles of pipeline. The District also owns and operates five hydroelectric power plants. Power from the District Plants is sold to Pacific Gas and Electric Company. The plants provide on an average year about 350 million kilowatt hours of energy, an amount estimated to serve the equivalent of 85,000 homes. Two other plants, producing about 4 million kilowatts hours annually, are operated by the District under terms of private financing contracts, with the District sharing in revenue. Recreation facilities, operated by concessionaires and the United States Forest Service, are also provided at four of the District's reservoirs.

eff. 6/11/03

1.03 ORGANIZATION OF THE DISTRICT

Under the provisions of the Irrigation District Law, California Water Code Sections 20500 et seq, the affairs of the District are administered by a Board of Directors consisting of five members who are elected for a term of four years. Each Board member is elected by qualified voters within a certain division of the District. The District employs a General Manager, who reports directly to the Board, and a staff of about 170 employees to perform the daily operations of the District.

eff. 6/11/03

1.04 MEETINGS OF BOARD

The Board holds regular meetings on the second and fourth Wednesdays of each month, at the District's main office, located at 1036 W. Main St., Grass Valley, California. The public is welcome and encouraged to attend these meetings.

1.05 PURPOSE OF REGULATIONS

These Regulations are published pursuant to Section 22257 of the Irrigation District Law and provide for the equitable distribution and use of water within the District.

1.06 MODIFICATIONS TO REGULATIONS

These Regulations may be modified, amended or supplemented at any time by Board action.

eff. 6/11/03

2Section 2

SECTION 2

DEFINITIONS

2.01 ACRE FOOT (Ac Ft)

Term used in water measurement. By California statute, one acre foot equals 43,560 cubic feet or 325,851 gallons.

eff. 6/11/03

2.02 AGENT

Any person hired or under contract with or acting on behalf of the District.

eff. 6/11/03

2.03 APPLICANT

Any person applying for District service.

eff. 6/11/03

2.04 AWWA

American Water Works Association

eff. 6/11/03

2.05 BOARD

The elected Board of Directors of Nevada Irrigation District.

eff. 6/11/03

2.06 CHARGES

Includes tolls, rates, fees and any charges for service rendered by District.

eff. 6/11/03

2.07 CONDUIT

Includes canals, laterals, ditches, flumes, pipes and appurtenances.

eff. 6/11/03

2.08 CUSTOMER

Any person supplied or entitled to be supplied with water service by the District in accordance with established regulations, rates and charges.

eff. 6/11/03

2.09 DISTRICT

Nevada Irrigation District, organized and operating under the State of California, Division 11 of the California Water Code.

eff. 6/11/03

2.10 DISTRICT APPROVAL

Approved by the Board, or a delegated employee, such as the General Manager.

eff. 6/11/03

2.11 DISTRICT FACILITY

Any facility which is owned by the District.

eff. 6/11/03

2.12 EMPLOYEE

Employed by the District on a regular basis to conduct the day-to-day business of the District.

eff. 6/11/03

2.13 FACILITIES

Any device or structure used for the storage, transmission, distribution, treatment, measurement of water, or for hydroelectric power production.

eff. 6/11/03

2.14 GENERAL MANAGER

Signifies the General Manager, as appointed by the Board, or the General Manager's authorized representative.

eff. 6/11/03

2.15 GOVERNMENT CODE

Refers to that portion of the California Codes governing generally the organization, powers, and responsibilities of governmental agencies and political subdivisions formed and existing within the State of California.

eff. 6/11/03

2.16 LANDOWNER

Holder of title of land located within the boundaries of the District.

eff. 6/11/03

2.17 MINER'S INCH (M.I.)

Term used in water measurement. By Northern California statute, one miner's inch equals 1.5 cubic feet per minute, or 11.22 gallons per minute.

eff. 6/11/03

2.18 OPERATE

Includes operation, maintenance, repair and replacement activities.

eff. 6/11/03

2.19 OUTSIDE DISTRICT

Property lying outside District boundaries, or excluded from District, and not subject to assessment.

eff. 6/11/03

2.20 PARCEL

Shall mean each separate lot or unit of land denominated by the county assessor as possessing and holding a separate parcel number, under the mapping and numbering systems of such assessor.

eff. 6/11/03

2.21 PERSON

Any person(s), firm, association, organization, partnership, business trust, corporation, company, or other entity.

eff. 6/11/03

2.22 PREMISES

Integrated land area including improvements operated under the same ownership and management.

eff. 6/11/03

2.23 PRIVATE FACILITY

Any facility not owned by the District.

eff. 6/11/03

2.24 RAW WATER

Water which has not been processed and is not safe for human consumption.

eff. 6/11/03

2.25 REGULATIONS

Refers to “Regulations Relating to Water Service” and includes all rules and regulations providing for the equitable distribution and use of water.

eff. 6/11/03

2.26 BOARD SECRETARY

Appointed by the Board to act as secretary to the Board.

eff. 6/11/03

2.27 TREATED WATER

Water which has been processed to make it safe for human consumption.

eff. 6/11/03

2.28 WATER CODE

Refers to that portion of the California Codes dealing with appropriation and control of water, and the formation and powers of an irrigation district.

eff. 6/11/03

2.29 WATER MAIN

District treated water pipeline used for water distribution.

eff. 6/11/03

2.30 WATER SERVICE

Includes the availability of water to a premises through District facilities and any water supplied through such facilities.

eff. 6/11/03

2.31 WATER USER

Any person actually supplied with water service by the District.

eff. 6/11/03

2.32 WITHIN DISTRICT

Property lying within the District boundaries.

eff. 6/11/03

3Section 3

SECTION 3

GENERAL CONDITIONS OF WATER SERVICE

3.01 CUSTOMER COMPLIANCE

Each customer, by applying for or receiving water service from the District, agrees to be bound by and to comply with all Regulations of the District, as adopted from time to time by the Board.

3.02 CONTROL OF DISTRICT FACILITIES

All District facilities are under the exclusive control of the Board and its designated employees; and no other person shall interfere with, regulate or control any such facilities, or the water flowing therein, without authorization of the Board.

3.03 ALL WATER BELONGS TO DISTRICT

The District expressly reserves the right to recapture, reuse and resell all waters within the boundaries of the District. No water user acquires a proprietary right by reason of use.

3.04 PLACE AND USE OF WATER

Except with the prior written authorization of the District, no customer shall use, or permit the use of any water furnished by the District on any premises, or for any purpose other than that specified in the application for service, nor shall any customer resell any water furnished by the District.

3.05 WATER CONSERVATION

The District has a duty to protect and preserve its water resources for future generations. Water is a limited commodity and should be utilized in a responsible manner. In order to preserve water and protect District water rights, conservation and efficient water use must be practiced.

The following is a list of water usage that the District may consider a waste and therefore unreasonable use.

Treated Water:

Washing down paved surfaces unless for safety or sanitation, in which case a bucket, a hose with a shut-off nozzle, or a low-volume/high-pressure water broom must be used:

- Watering or irrigating landscapes or vegetation of any kind that creates excessive water flow or runoff onto pavement, gutters or ditches;
- Washing of vehicle with a hose unless equipped with a water shut-off nozzle (does not apply to commercial car washes);
- Cleaning of gutters by flooding with water;
- Landscape watering during the heat of the day (between 10am and 6pm);
- Use of fountains and water features that do not re-circulate water;
- Failure to repair leaks, breaks or malfunctions in a timely manner once found or after receiving a notice from the District;
- Outdoor watering during periods of rain;
- Any infraction of mandatory measures in place during implementation of District Drought Contingency Plan.

Irrigation Water:

- Failure to repair leaks, breaks or malfunctions in a timely manner once found, or after receiving notice from the District;
- Water not confined to the customer's property and being allowed to run off and cause damage to adjoining properties or to the roadside ditch or gutter;

- Any infraction of mandatory measures in place during implementation of Drought Contingency Plan.

Water users in violation of any of the practices, or one who willfully, carelessly, or due to defective or inadequate private facilities, may be subject to fines, reduction, or termination of service.

eff. 7/22/2015

3.06 TITLE TO WATER DELIVERED

Title to water furnished by the District, the risk of loss thereof and full responsibility for the carriage, handling, storage, disposal and use thereof shall pass from the District to the water user at the service point from the District facility.

3.07 OUTSIDE DISTRICT WATER USE

No use of District water will take place outside the District, except when it is deemed surplus to the needs of the District and the Board has declared the water surplus and approved an agreement for its sale. No outside District water user acquires a proprietary right by reason of past use. Applicants must reapply for service every three years on metered accounts and once a year for non-metered accounts. Outside District user(s) located within the interior boundaries of the District shall not be permitted to upsize their service without expressed approval by the Board.

eff. 6/22/88

3.08 NON-LIABILITY OF DISTRICT

The District will exercise reasonable care and diligence to deliver a continuous supply of water to its customers. However, the District is not, and will not, be liable for any loss, damage, or inconvenience to any water user by reason of shortage, insufficiency, suspension, or discontinuance of water service, or the increase of decrease of water pressure. Each water user

agrees to hold the District and its employees and agents free and harmless from liability and damages caused by such loss, damage, or inconvenience.

3.09 ENGINEERING SERVICES

All water users and applicants requiring special engineering, inspection and administration, relating to providing water service, as well as for relocation or modifications to District facilities, will compensate the District for such special services.

eff. 1/1/94

3.10 UPDATING SPECIFIC CHARGES

All specific charges provided for in these Regulations will be reviewed and updated, if found necessary, on a periodic basis. All reviews will be conducted on an actual cost of service basis to provide for the most equitable charges possible.

3.11 ADDITIONAL CONDITIONS CONTAINED IN APPLICATIONS

Applications for water service may contain additional conditions and requirements relating to service. By signing the application, the customer acknowledges compliance with those additional conditions, as well as these Regulations.

3.12 ENFORCEMENT OF REGULATIONS

The General Manager shall enforce the provisions of the Regulations and will provide explanations and information as may be necessary and proper in connection with the Regulations. The General Manager may also make minor modifications to all forms contained in Appendix B of these Regulations.

eff. 6/11/03

4Section 4

SECTION 4

TREATED WATER SERVICE

4.01 SUPPLEMENTAL DEFINITIONS

4.01.01 Fully Treated Water

Water receiving treatment that will meet all applicable state health standards for a treated water system.

eff. 6/11/03

4.01.02 Tank or Temporary Construction Water

Water utilized from a non-permanent service point normally drafted from a fire hydrant, for temporary purposes, such as for construction activities. Water may also be provided from the District's raw water system. This class of water is not to be used for domestic purposes, except in an emergency situation as determined by the District.

eff. 8/12/87; rev. 6/11/03

4.01.03 Commercial Use

All uses of water except those categories included as non-commercial use.

eff. 6/11/03

4.01.04 Non-commercial Use

All uses of water by individual residences, as well as by public agencies, schools, churches, and documented non-profit entities.

eff. 6/11/03

4.01.05 Commercial/Production Agriculture Use

All uses of water for the production of crops, plants, or farm animals for sale or trade.

eff. 07/12/17

4.01.06 Conveyance Agreement

An agreement entered into by the District and a developer, as discussed further in Section 10.03.03, which provides for the installation and conveyance of certain facilities to be owned and operated by the District related to the treatment, transportation, distribution and/or storage of water and further specifies the capacity charge payable upon connection to such facilities.

eff. 6/11/03

4.01.07 Water Development Agreement

A written agreement between the District and developer relating to the installation of certain treated water system improvements or to special capacity charges. This term was utilized in referring to Board Resolution 74-55.

eff. 6/11/03

4.01.08 Standby Charge

A charge levied against a parcel which is not receiving treated water service from the District to compensate for the costs of maintaining and operating existing District facilities capable of serving the parcel.

eff. 6/11/03

4.01.09 Standby Factor

A retroactive standby charge from the date the pipeline was installed, or accepted by the District, to the date the parcel was divided.

eff. 6/11/03

4.01.10 Minimum Size Water Service

Considered to be a 5/8-inch metered treated water service.

eff. 6/11/03

4.02 STANDBY CHARGES

4.02.01 General

There shall be a charge, as shown in Schedule 4-A, to each parcel located in the District, which parcel is adjacent to, and has direct access to, a District treated water main which can provide a minimum size service. A parcel which is located so that a connection may be made to a District water main without necessity of obtaining any additional "non-District" easements or rights of access from any party will be considered as having direct access. The necessity of obtaining an encroachment permit or equivalent permission from the state or county division of government designated as controlling a roadway or easement, shall not prevent the levy of a standby charge. A parcel will be considered adjacent to a District water main when a principal part of the parcel's frontage has access to the water main as further discussed in Section 10.01.01(c) of these Regulations.

A court decree or proscription of the Department of Real Estate, Corporation Commission or other state or county body or official against using land for residential or commercial purposes shall not excuse such land from being subject to a standby charge as a parcel.

Upon the completion of a new treated water main, or acceptance of any treated water main by the District, the District will provide a written notice to owners of parcels having direct access to the new treated water main. Such notice will inform the parcel owner(s) of:

(a) the opportunity to connect to the new treated water main for water service, and related cost for connection; and

(b) the option to put off connection to the new treated water main, whereas, the parcel owner(s) will be subject to standby charges; and

(c) the option to defer standby charges if the parcel has another source of water, in accordance with Section 4.02.04; and

If the parcel is connected to the new treated water main within six months following the notice, the parcel will not be subject to standby charges; alternatively, if the parcel has not been connected within six month, the parcel will be subject to standby charges.

If the parcel owner(s) postpone connection to the new treated water main more than six months following the notice, the District will issue a statement for payment of standby charges, in accordance with Section 6.01.03, and every six months thereafter until the parcel is connected to the main, unless a Standby Deferment Agreement is approved by the District.

rev. 03/04/12

4.02.02 Uncollected Standby

Prior to acceptance of an application for water service, any uncollected standby, whether or not billed, shall be collected. Standby charges are collectable from the date the parcel became adjacent to, and had direct access to, a District water main and as determined by past agreements and inception dates of the standby charge.

The standby charges paid by the owners of a parcel shall remain with and run with the parcel and may not be transferred or assigned except that the successor owner of the same parcel shall receive credit for all standby charges paid by predecessor of the same parcel.

4.02.03 Parcel Divisions

If a parcel shall be divided into two or more parcels adequately fronting a District water main, for the purpose of this provision, each division of the larger parcel shall be entitled to credit for its ratio of the total standby charges previously paid by the larger parcel. The ratio shall be the number one over the number representing the total number of parcels existing after the division. The

standby charge shall be calculated as if the parcels formed by the division shall have existed on the date the pipeline was installed or accepted by the District.

If there is an existing metered service prior to the division of a parcel, there is no credit given to the new parcels created that have no water service.

The standby factor may be deferred until the water service is requested.

4.02.04 Properties Having Another Source of Water

A parcel which is subject to a standby charge, but which has a well or raw water service prior to installation of the District water main, may not be subject to the standby charge upon District approval. Should water service be requested at a later date, back standby charges and late charges will be collected from the date the parcel became subject to a standby charge.

eff. 9/15/95

4.02.05 Variances Granted by the Board

When a system extension variance is granted by the Board, as discussed in Section 10.08, a standby charge from the date the District main was installed or accepted by the District shall be paid prior the District's acceptance of the application for water service for that parcel.

4.03 WATER SERVICE REQUEST

4.03.01 Route Slip

As a first step in receiving water service, an applicant must fill out Form 4-A, Request for New Treated Water Service, Information Route Sheet, or Form 4-B, Request for Transfer of Treated Water Service, Information Route Sheet.

4.03.02 Application

If water service is available to the parcel, as determined by the District, the owner will be required to sign a formal application Form 4-C, except as noted in Section 4.03.03, and pay the appropriate connection fee and any other fees and/or deposits that are payable under these Regulations. Applicants for tank or temporary construction water need to fill out Form 4-D and do not go through the route sheet procedures.

4.03.03 Exception to Signed Application

In order to continue water service to properties that are owned by Federal National Mortgage Association (FNMA), an authorized representative may sign the application for water service in lieu of FNMA. $150.00 must be paid on the account to be applied against the water service charges and the account must be kept current.

eff. 2/22/95; rev. 6/11/03

4.04 CONNECTION FEES

4.04.01 General

The connection fee is made up of two components; the meter installation charge and the capacity charge. As discussed further in Section 4.04.03, the actual capacity charge for a particular water service may vary based on prior agreements covering the service.

4.04.02 Meter Installation Charge

This charge is shown in Schedule 4-A and compensates the District for the cost of installing a meter and related piping and appurtenances at a District specified location. Customers requesting an alternate location of a meter assembly other than that specified, if approved, may be charged additional costs as provided in Section 4.06.02.

rev. 01/26/05

4.04.03 Capacity Charge

The capacity charge represents the customer's share of capital costs associated with the District's treated water system. Cost components are included for the treatment plant, storage tank and transmission pipelines and are based on the anticipated capacity requirements of a water service. These charges are non-refundable if service is terminated at a later date.

Capacity charges are shown in Schedule 4-A; however, in the case of water services covered by conveyance agreements or water development agreements, special capacity charges may be indicated. All water development agreements based on Board Resolution 74-55 provide for no capacity charge for a minimum size water service since the original developer had paid these charges, or installed the necessary water system improvements as part of the development. (The term "water development agreement' is no longer utilized in writing agreements.)

4.05 WATER PRESSURE

4.05.01 Variations of Water Pressure

Due to the foothill terrain predominating District treated water service areas, large variations of pressure can occur along a short stretch of any water main. Under normal conditions, the District attempts to maintain a minimum pressure of 20 pounds per square inch (psi) at its water main. It is the customer's responsibility to provide adequate size service lines on the customer side of the meter assembly, as well as any pumping facilities needed to compensate for water pressure losses between the meter assembly to the point of water use.

4.05.02 Low Pressure

If the District determines that a new service point would provide a normal pressure of less than 20 psi at the District's water main, the customer will be informed of the low pressure situation at the time of application. The customer will be required to acknowledge in writing that a notification was received prior to District approval of the application.

4.05.03 High Pressure

If the District determines that a new service point may provide pressure in excess of 80 psi at the District's water main, the customer will be notified of the high pressure at the time of application and that the installation of a pressure-reducing valve, along with a pressure relief valve, may be advisable. The customer will be responsible for installation and maintenance of the valves.

The District will provide the installation of a pressure-reducing valve at no cost to the existing customer where actions by the District cause an increase in the normal sustained operating pressure in the water main to exceed 80 psi. Upon installation, the pressure-reducing valve becomes the property and responsibility of the customer.

4.05.04 Excessive Pressure Variations Caused by Customer's Equipment

A customer shall not install any pump, quick closing valve, or other equipment or devices which cause excessive pressure drops or surges in the District's water system. Violation of this regulation will be cause for immediate termination of service. The customer will be liable for all damages to District facilities resulting from the installation of any such equipment.

4.05.05 Water Heaters

Water heater installations should be made in conformity with the applicable plumbing code. In addition, customers with back flow protection devices or pressure reducing valves installed as part of their water service should consult with a professional plumber for advice on thermal expansion safeguards.

The District will not be responsible for the safety of domestic or commercial water heaters, boilers or tanks on the premises of any customer.

eff. 6/11/03

4.06 METER INSTALLATIONS

4.06.01 General

In order to equitably distribute, conserve and limit capacity in the District's water system, all treated water services will be metered in a manner meeting District approval. The District will

own and maintain the meter assembly to and including the customer's service valve located on the customer's side of the meter.

4.06.02 Installation

Installation of a 5/8" or 3/4" meter for parcels with an existing service lateral will be subject to the Drop In rate as established in Schedule 4-A. Locations without an existing service lateral will be charged at the Installation Requiring Tap to Main rate as established in Schedule 4-A. Applicants shall submit a completed Form 4A(1) Request for New Treated Water Service.

Installation of a meter over 3/4", or any fire meter, will require the applicant submit a completed Form 4A(2) Request for New Treated Water Service and Fire Meter, and pay the Water Availability Fee as determined in Schedule 6-A. The District will provide the applicant the pressure, and if applicable, the existing service lateral size. The applicant shall confirm if the existing service lateral is adequate to meet their requirements.
Rev. 06/27/18

4.06.03 Parcel Requirements

Each parcel of land being served treated water must have at least one meter connection. A meter connection may not be used to serve two or more parcels. An exception to the above is the use of one meter connection to serve a green belt area common to several parcels which contain commercial type development. In this case, the owners of the parcels being served must either form an association or assign a trustee who is responsible for the upkeep of the common area and responsible for paying water use charges. Each of the parcels involved in the green belt area must have its own meter connection for water uses other than service to the green belt area.

In certain instances the District, at its sole discretion, may permit a single parcel to have more than one meter connection. Examples include a shopping center with varied tenant water requirements or two residences located on one parcel. The District may require parallel meter assemblies with downstream valved interties for certain customers who are sensitive to water outages caused by periodic maintenance or testing of the meter assembly.

4.06.04 Extent of Service Through Meter

The District provides metered service by using two different concepts, individual meters and master meters.

Individual meters are used for residential, commercial, commercial/production agriculture, industrial parcels and lots as well as townhomes, residential condominiums and mobile home subdivision lots. In general, individual meters are placed along the street frontage of each parcel at lot corners. In the case of individually metered condominiums and townhomes, the meters are placed in the general vicinity of each cluster of units in a manner acceptable to the District and the onsite waterlines leading to the meter complexes are conveyed to the District for ownership. Separate meters are required for green belt and common use areas in these types of developments.

Master meters are used for apartment buildings, mobile home parks, motels, hotels, campgrounds, hospitals, skilled nursing facilities and board and care facilities. Master meters are generally placed along the project's frontage near the District's water main in a manner meeting District approval. In certain instances, the District may require conveyance and ownership of water mains located inside the project in order to properly serve areas lying beyond the project or to provide for future looping of the District's water distribution system. In these cases, master meters may be placed along the interior of the project in the general vicinity of the main building clusters in a manner meeting District approval.

Condominiums developed for office, professional, commercial, or industrial uses may be metered individually or by a master meter at the discretion of the owner. If a master meter is selected, an association or trustee must be assigned the responsibility for paying all water use charges.

Parcels involved with commercial/production agriculture use must have its own dedicated meter connection for irrigation use separate from the domestic use meter. Each meter is subject to all applicable connection and capacity fees. The irrigation and domestic meter shall be subject to backflow requirements as set forth in Section 9 of these regulations.

rev. 08/09/17

The metering concepts discussed above shall also apply to the conversions of existing buildings. As an example, conversions of a building to residential condominiums will require a meter for each unit.

From time to time, new state and county statutes may be adopted allowing for new types of developments. The metering concept to be used, either master meter or individual meters, in cases of types of developments not specifically discussed in these Regulations, will be determined by the District on a case-by-case basis.

eff. 6/11/03

4.06.05 Sizing

The customer will make the basic determination as to the size of meter required; however, the District reserves the right to approve the size of service allowed.

Services to individual homes are normally limited to 5/8-inch or ¾-inch size.

4.06.06 Customer Responsibilities

The customer is responsible for the acquisition and maintenance of any required easements or permits; the installation, maintenance and operation of the private service pipeline and appurtenances thereof located on the customer's side of the service valve. See additional responsibilities as outlined in Section 4.14 of these Regulations.

The customer must ensure that no landscaping, encroachments or any other form of property improvement shall be so placed as to cause a hindrance to the access between the road or street and the meter service box. Hindrance of District access to the meter may cause water service to be cut off. The customer's plumbing shall be connected to the meter box in a manner that will not hinder the maintenance or reading of the meter.

4.06.07 Frequency of Meter Readings

In general, meters shall be read on a monthly basis. As it is not always practical to read meters at equal intervals, the period between reading dates may vary and still be considered one month for billing purposes.

Special readings will be made on commencement and termination of service and as required by special circumstances.

rev. 04/25/06, 09/12/07, 02/27/19

4.06.08 Non-registering and Unreadable Meters

If a meter fails to register or cannot be read due to circumstances beyond District's control, such as snow cover, consumption shall be estimated based on prior usage or in the event there is not sufficient prior history, from any water usage information available.

Where a meter cannot be read without undue difficulty because of an obstruction, the customer will be notified and requested to correct the condition. If the condition is not corrected by a given date, the District will remove the obstruction at the customer's expense.

4.06.09 Testing Meters

The District will test the accuracy of any of its meters upon the request of a customer, who will deposit the cost of such test as shown in Schedule 4-B.

The customer may, if he desires, witness the test. If a meter is found to be working improperly, it will be repaired or replaced by the District. If it is determined that the meter is registering more than five percent over the actual quantities passing through it, District will return the deposit for the test and adjust the billing. The period covered by the billing adjustment shall not exceed the preceding six months. If the meter registers within the limit of error specified above, the test deposit will be retained by the District.

4.07 CHANGE OF EXISTING SERVICE

4.07.01 Upsizing

When a customer requests an existing metered service to be upsized and no modification work will be required outside of the meter box, the customer cost for said service shall be the difference between the smaller and larger meter installation and capacity charges, as shown in Schedule 4-A, plus an additional charge to cover labor costs as shown in Schedule 4-B.

When work outside the meter box is required, such as a new service line or tap, the customer cost will be the full amount of the larger size meter installation charge and the difference between the meter size's capacity charges, as shown in Schedule 4-A.

eff. 6/11/03

4.07.02 Downsizing

A charge, as shown in Schedule 4-B, will be made to cover labor cost. In these cases, no modifications would be made outside of the meter box. No refund of meter installation or capacity charges will be given.

4.07.03 Relocating

Any relocation of District meters and/or service laterals will require approval by the District. Customers requesting the relocation of an existing meter shall pay all costs associated with the relocation based on the District's estimated cost, except that the customer shall not be charged less than the stated fee for the following standard relocations:

(a) Customer requested relocation of a meter assembly involving a meter size of 3/4-inch or less, a relocation distance of no more than 15 feet horizontally and/or 2 feet vertically, and not requiring a new tap to the water main nor other extra ordinary effort will be accomplished for the fee as shown in Schedule 4B (Relocating).

(b) Customer requested relocation of a meter assembly involving a meter size of 3/4-inch or less, requiring a new tap on the water main, the installation of no more than 15 feet of new

service lateral between the water main and the new location of the meter, and not requiring any other extra ordinary effort will be accomplished for the fee as indicated on Schedule 4A for installation charges, which pertains to the size of each meter involved in the relocation.

eff. 12/12/90; rev. 6/11/03; rev. 1/26/05

4.08 WATER RATES

All water rates are determined on a cost of service basis and are normally adjusted once a year. Water Rate Schedules 4-E through 4-L have been developed based on such factors as use of water, type of customer, treatment level and location of user.

eff. 7/11/90; rev. 3/26/04

4.09 OFF RATE

All customers who have their services shut off are subject to the off-rate charges shown in Schedule 4-I.

eff. 7/11/90; rev. 1/26/05

4.10 LEAK ADJUSTMENT

An adjustment for treated water loss may be granted by the District per parcel, per owner, if:

1. The usage during the period is at least 2.5 times the usage for a comparable period of normal use and;
2. Adjusting the bill would result in a reduction of $200 or more and;
3. Not more than one leak adjustment event, based on this section, shall be allowed to the same owner within a five-year period.

Adjustments can be granted for up to two consecutive billing periods per leak adjustment event. Request for adjustment must be made in writing by the property owner. Form 4-E is used to calculate the adjustment.

The Operations Manager shall have the authority to make adjustments up to $2,000.

The General Manager shall have the authority to make adjustments between $2,000 and $5,000.

The Board of Directors shall have the authority to make adjustments of greater than $5,000.

eff. 10/10/84, rev. 05/13/15, rev. 04/11/18

4.11 WATER AVAILABILITY LETTERS

4.11.01 General

Upon receiving a written request, the District will issue a letter giving the current status of water availability to a project or parcel of land. This letter will state, in general terms and without making a commitment to serve the project, whether the project is within the District's boundaries, or within the various treated water system plan boundaries, and if capacity is currently available and under what conditions. The District will attempt to identify any potential
problems that may be associated with making water available to the project (i.e. such as possible high or low pressure).

eff. 6/11/03

4.11.02 Administrative Processing Fee

An administrative processing fee of $50.00 shall be charged for water availability letters that require review by staff. This fee shall not apply for letters prepared for parcels with existing water or standby accounts. This fee may be waived if it is determined to be in the best interest of the District that the letter be issued.

eff. 12/12/90

4.12 WILL SERVE LETTERS

4.12.01 General

A written request for a commitment of specific capacity to a project or parcel of land may be made to the District. A Will Serve Letter, however, will not be issued to any project requiring a county or city use permit, general plan or zoning change, or tentative map until the appropriate agency has conditionally approved the project. If issued, these letters may have specific time limits and will identify any conditions relating to providing water service as well as those items covered in a water availability letter as discussed in Section 4.11.

4.12.02 Extension Not Required

The owner of property not requiring an extension of the treated water system and otherwise qualifying for service by paying a standby charge may receive a Will Serve Letter covering a minimum size water service. No time limit will be stated in the letter unless a larger than minimum size service is requested. A commitment for an upsized service or additional services may be made by the District for a period of six months from the letter issuance date. This commitment terminates at the end of this period if the water service application process is not completed and all applicable fees and charges paid.

4.12.03 Extension Required

The owner of property requiring an extension of the treated water system and qualifying for water service pursuant to these Regulations, may receive a Will Serve Letter form the District. In order to maintain the capacity commitment, preliminary improvement plans meeting the requirements of the District and payment of the plan check and inspection fee deposit must be received by the District within six months of the date of issuance of the letter. Within one year of letter issuance, a conveyance agreement must be entered into.

4.13 OUTSIDE DISTRICT TREATED WATER SERVICE

The District shall provide treated water to existing outside District customers on a surplus basis only. This service will be for a maximum of three (3) years, at which time a renewal of the water

application will be required. District will not accept new treated water service connections if the lands to be served lie outside the District Boundaries.

The District will not allow an off-rate charge as discussed in Section 4.09 of these Regulations. If service is requested to be turned off, the meter will be removed and the right for service terminated until such time as the lands are annexed into the District and the then current connection fees or other changes are paid.

eff. 7/9/86

4.14 PRIVATE PIPELINES

4.14.01 General

In earlier years, prior to adoption of these Regulations, the District allowed treated water service through a private pipeline that served two or more customers. Meter assemblies were subsequently installed by the District on these private pipelines to provide accountability of water use to each individual customer. In these instances, the property owners receiving water service off the private pipeline are responsible for the acquisition and maintenance of any required easements or permits, as well as the maintenance and operation of the pipeline and appurtenances thereof. The meter assembly, as discussed in Section 4.06.01 of these Regulations, will remain the property of the District.

In certain instances, the District may participate in the replacement of private pipelines with District-owned water mains. See Section 10.09 of these Regulations.

4.14.02 Leakage

If the District determines that a private pipeline has leakage, the property owners receiving water via the private facility will be notified that repairs must be made within a time period, as determined by the District, or water service will be discontinued. In addition to the above, District reserves the right to prorate and bill for the estimated leakage to each of the property owners served off the private pipeline. The District may also, at its option, install a master meter at the head of a

private pipeline that serves two (2) or more properties and prorate the cost of the unaccounted lost water to each property owner.

5Section 5

SECTION 5

RAW WATER SERVICE

5.01 SUPPLEMENTAL DEFINITIONS

5.01.01 Raw Water

Untreated water to be utilized for purposes other than human consumption.

5.01.02 Seasonal Irrigation Service

Water delivered from approximately April 15 and ending approximately October 14, unless otherwise determined by the Board. Dates may vary to meet individual crop needs or maintenance of District facilities.

eff. 6/11/03

5.01.03 Winter Water Service

Water delivered approximately October 15 and ending approximately April 14, unless otherwise determined by the Board.

eff. 9/25/91

5.01.04 Annual Raw Water Service

Deliveries made year round at rates of flow that may differ between the irrigation and the winter seasons. No new accounts are accepted for this category of service.

eff. 5/24/89

5.01.05 Intermittent Flow Service

Water delivered which cannot be supplemented by an auxiliary supply from the District, and in District's opinion cannot be considered a firm supply.

5.01.06 Fall/Stock Water

A service available during the period from October 15 to December 1, both dates inclusive. This service will only be provided when and where District has available water and is secondary to seasonal or demand water.

eff. 12/12/90

5.01.07 Demand Water Service

Water requested for a predetermined period. This service will only be provided when and where District has available water in excess of requirements for seasonal water.

5.01.08 Tank or Temporary Construction Water

Water utilized from a non-permanent service point for temporary purposes such as for construction activities. This class of water is not to be used for domestic purposes.

eff. 8/12/87

5.01.09 Miner's Inch (M.I.)

Term used in water measurement. By California statute, one miner's inch equals 1.5 cubic feet per minute, or 11.22 gallons per minute.

5.01.10 Rotation

A method of delivering water where two or more customers of close proximity receive water on a predetermined schedule. The amount of the delivery must balance to the constant flow of the purchase.

5.01.11 Surplus Water

Water which is surplus to the needs of lands within the District boundaries.

5.01.12 Closed Raw Water Integrated Conduit System

Any District or privately owned closed conduit facility, i.e., pipeline, which is utilized to convey raw water and has more than one service connection being used for annual deliveries.

5.01.13 Service Outlet

A service connection intended to divert, deliver and measure water to a customer.

5.01.14 Mutual Water Company, Special District, or Entity

Any entity legally organized for the purposes of distribution and purchase of water to specifically identified parcels of land.

eff. 6/11/03

5.01.15 Primary Account

Account in authority for a service outlet, designated by the parcel owner that paid for the initial installation of the service outlet.

5.01.16 Private Conduit Account

Accounts that are served through a primary account service outlet when excess capacity is available and permission has been granted by the Primary Account Holder.

5.01.17 Primary Account Holder

The person that paid for the initial installation of the service outlet. The Primary Account is subject to transfer in accordance with Section 5.04.01.

eff. 01/22/14

5.02 WATER SERVICE REQUEST

5.02.01 Route Slip

As a first step in receiving a new water service, an applicant must fill out Form 5-A, Raw Water Service, Information Route Sheet. Applicants for an intermittent flow service do not need to fill out this form.

5.02.02 Application

If a water service is available to the parcel, as determined by the District, the applicant will be required to sign a formal application as discussed hereafter and pay the appropriate installation charges, plus any other fees and/or deposits that are payable under these regulations.

(a) Seasonal Irrigation Service. New Owner must sign Form 5-B and have it on file at the District's office on or before April 1 in order to ensure a supply of water for the current irrigation season. Applications for service are effective until there is a change in ownership.

eff. 03/11/98

(b) Winter Water Service. Applicant must sign Form 5-B.

(c) Annual Raw Water Service. Transfer applications for existing annual raw water service will be made on Form 5-C. No new applications will be accepted. Annual accounts turned off at the customer's request, or for non-payment, will be transferred to a seasonal account.

eff. 5/24/89

(d) Intermittent Flow Service. Applicant must sign Form 5-D. Water sales will be established in acre-feet by District through pump ratings, sprinkler flow, actual diversions, acreage

irrigated or any combination of these methods as may be deemed appropriate to determine the amount of water to be used.

(e) Fall Water Service. Application shall be made on Form 5-B, available at District office.

eff. 12/12/90

(f) Demand Water Service. Application for service shall be made on Form 5-B and should be made at least five days before service is required.

(g) Tank or Temporary Construction Water. Application shall be made on Form 4-D.

(h) Surplus Water. Application for use of water outside the District boundaries shall be by agreement on Form 5-E and must be on file at the District's office on or before April 1 of each year in order to be considered for a supply of water for the current irrigation season. All applications for surplus water are subject to Board approval.

(i) Rotation. Applications must be received by April 1, in order that schedules for rotation delivery can be developed prior to commencement of irrigation season. If an equitable rotation schedule cannot be reasonably developed due to changes in water purchases, or property owners not returning applications on a timely basis as indicated above, District, at its discretion, may order that the water be delivered on a continuous flow basis. Applications for rotation delivery received after April 1 will be delivered water on a continuous basis for the season.

5.02.03 Cancellation

Upon request of the customer, cancellation of the current seasonal irrigation service may be made during any time of the season, either in whole or in part. The quantity of such seasonal irrigation water delivered shall be charged on a pro-rated basis up to the date of cancellation and a service call fee, as shown on Schedule 7-A, shall be charged.

eff. 7/12/89; rev. 6/11/03

5.02.04 Early Application Discount

Applications for seasonal irrigation service received on or before April 1, together with full payment, shall have a 5% discount on their charges. This discount shall not apply to those types of entities referred to in Section 5.08.

eff. 3/10/93

5.02.05 Change in Seasonal Irrigation Service

During the irrigation season, charges for requested increases or decreases may be prorated with the addition of a service call charge as shown on Schedule 7-A.

eff. 12/11/94

5.03 WATER USE EXCLUSIONS

5.03.01 Integrated Raw Water Conduit

Applications for water service will not be accepted from a closed raw water integrated conduit system where said service is proposed to be used for annual deliveries.

5.03.02 Fish Cultivation

The District will not sell water to cultivate and/or sustain fish life.

5.03.03 Water Use for Residential Purposes

The Federal Safe Drinking Water Act definition of a Public Water System (PWS) includes the District's raw water delivery system. Guidelines implementing the definition of a PWS prohibit the District from providing raw water for human consumption. Therefore, use of raw water for drinking and cooking is excluded for all customers, unless processed by an approved home treatment facility as provided in this section.

(a) Applications For New Water Service

The District will not accept new applications for raw water service where the proposed water use is for residential purposes, regardless of the applicant's intent to use bottled water, hauled treated water, or provide a home treatment facility. No applications will be accepted for annual raw water service.

(b) Water For Drinking or Cooking

Existing District raw water customers not using a well or spring for all drinking and cooking needs must be connected to a Public Water System, use bottled water or hauled treated water, or use water processed by an approved home treatment facility.

(1) Bottled or Hauled Treated Water

Bottled or hauled treated water used for drinking or cooking must be delivered to the parcel(s) by a commercial distributor who has agreed, in writing, to District conditions.

(2) Home Treatment Facility

A home treatment facility used to produce water for drinking or cooking must be approved by the Department of Health Services. The facility must be operated, maintained, and monitored by the District or its agent, under contract with the owner.

(c) Cost and Expense

All costs for providing water for drinking and cooking, including District costs, will be at the owner's expense.

eff. 03/22/00

5.04 SERVICE OUTLETS

5.04.01 General

The District owns and maintains the water service outlet assembly up to and including the service valve located on the discharge side of the service outlet. All facilities beyond this point are the

responsibility of the customer. All service outlets will contain a means of measuring the amount and/or flow rate of water delivered to a customer(s). The means of measuring flow and amount of water, and the units of measurement for billing purposes, shall be subject to change by the Board of Directors based on the customs and practices of the industry.

Each service outlet will be assigned to a single Primary Account and to a parcel designated by the account holder that paid for the initial installation (the "Primary Account Holder"). Service outlets will not be assigned to more than one Primary Account, but may be used for a shared service to a Private Conduit in accordance with Section 5.06.05. In cases where the Primary Account Holder owns multiple parcels or subdivides a parcel, he/she must notify the District in writing as to which parcel the service outlet should be assigned.

In the event that the ownership and/or designated parcel of a Primary Account is not evident based on historical records of the District, the District will assign the Primary Account based on the natural progression of ownership and/or the seniority of the account. A service outlet's Primary Account may be transferred upon the written request of the Primary Account Holder. The Primary Account Holder requesting transfer shall notify, in writing, the District and all Private Conduit Accounts served by the service outlet of the proposed transfer. Both the existing and the proposed Primary Account Holders shall sign a notarized transfer agreement to document said transfer.

rev. 01/22/14

5.04.02 Location

The District shall have the sole discretion and authority on the final selection of the location for raw water service outlets. This site selection prerogative shall pertain to services from raw water pipelines, open canal facilities and, where applicable, certain natural randoms or streams. The outlet location shall be determined prior to District accepting an application and collecting the installation fee. The following shall be used in location of service outlets:

(a) The District shall endeavor to accommodate the customer in selecting the location. However, the District must give consideration in the selection of the point of service to the integrity of the hydraulics in the conveyance system. Any location which will create undue expense for operation and maintenance of the system or will create unacceptable distortion to the hydraulics of the facility or stream will not be permitted by the District.

(b) Any service outlet location for a raw water service which will require additional appurtenances such as a special measuring structure, check structure or screening device in order to ensure water delivery for the service point, shall be constructed by the District at the sole cost of the applicant, in accordance with District standards.

(c) Where approved, the amount of the purchase from natural randoms or streams, supplied by the District, shall be sales of no less than one (1) miner's inch of water. The District, through pump ratings, sprinkler flows, actual diversions, or any combination of the above methods, will determine the amount of purchase.

Changes in purchase amount of irrigation water will be allowed only after field review by the District Staff, and a determination made that a change is in order. Inspections of the services from natural randoms or streams will be made by the District to insure that the amount of water purchased is in compliance with the seasonal application.

eff. 7/9/86

(d) There shall be no new services located on the following types of facilities since they shall be utilized for storage and transmission purposes only: inverted or standard siphons, except where approved centralized service manifolds have been established, drop pipes or chute flumes, elevated flumes or pipes, penstocks, or reservoirs.

eff. 6/22/88

(e) In some instances, due to the canal size and the irrigation water demands, the service box outlet will only be installed during the non-irrigation season.

5.04.03 Installation Charges

These charges for a standard installation are shown in Schedule 5-B and are due at the time formal application is made. The cost of additional appurtenances, if required, will be added to the standard installation charges.

5.04.04 Multiple Service Outlets

More than one point of service may be permitted by the District for delivery of the customer's entitled water, provided the customer will take the water in a manner acceptable to the District. An additional outlet, or outlets, will be installed by the District at customer's expense, including installation as shown in Schedule 5-B and annual charges as shown in Schedule 5-C. If the customer fails to comply with conditions prescribed by the District, the use of an additional box, or boxes and/or water service may be discontinued.

5.04.05 Removal

A service outlet will be removed at the expense of the District after notification by the property owner on Form 5-F, provided by the District. Once an outlet(s) has been removed, re-establishing water service shall be in accordance with these Regulations, including the appropriate installation charges.

On outside District accounts, the service outlet will be removed if water is not purchased every other year. If an application for service is not received by April 1 of the second year, the property owner shall be notified in writing that, if water is not purchased within 30 days of the date of notification, the outlet shall be removed and the account deleted.

eff. 1/1/89

5.04.06 Account Charges

Until such time as an outlet is removed, an annual charge as shown in Schedule 5-C will be collected with or without the purchase of water. This charge does not guarantee or imply that raw water will be available at a future date for an inactive account.

eff. 1/1/89

5.04.07 Relocation

Relocation of an existing raw water service outlet will be accomplished as outlined under Sections 5.04.01 and 5.04.02 and will be done for the new service outlet installation charge as shown in Schedule 5-B.

eff. 5/27/87

5.05 WATER RATES

All water rates are determined on a cost of service basis and are normally adjusted once a year. Water Rate Schedules 5-C through 5-R have been developed based on such factors as location, billing period and reliability of water flow.

eff. 6/11/03

5.06 PRIVATE FACILITIES

5.06.01 Use Of

Upon approval of the District, private facilities may be used to transport and distribute raw water provided that the facilities are in good repair, will not cause excessive water losses, and are adequate in capacity to serve additional water. The District will construct and maintain, at the head of private facilities, such controls as diversion structures, gates and/or measuring devices as necessary to control water flow, purchased by owners of the private facilities. The District will

not provide service through a private facility without first receiving approval from the owners of the private facility on Form 5-G provided by the District.

See Section 2 of these Regulations for further clarification on the use of private facilities.

eff. 6/11/03

5.06.02 Operation and Maintenance

District responsibilities for operation and maintenance ends at the beginning of the private facilities.

5.06.03 Excessive Leakage

If the District determines that a private facility has excessive leakage, the facility owner(s) will be notified that repairs must be made within a time period, as determined by District, or water service will be discontinued.

5.06.04 Non-payment of Accounts

Customers receiving raw water from a private facility serving two or more customers, shall have the amount of water reduced at the head of the private facility for non-payment of their accounts.

The District will not in any way be responsible for insuring that water is received by the paying customers on the private facility.

eff. 10/11/89; rev. 6/11/03

5.06.05 Private Conduits

Shared service to a private conduit through a Primary Account service outlet is available with the approval of the Primary Account Holder and provided excess capacity is available at the service outlet. The Primary Account holder must provide written permission through the use of form 5-G. Utilization of the service outlet to serve a private conduit account is subject to discontinuance at any time by direction of the Primary Account Holder, provided a minimum of 30 days notification

prior to the start of irrigation season. Private Conduits Accounts may not be discontinued during the irrigation season.

eff. 01/22/14

5.07 HYDROELECTRIC DEVELOPMENT

5.07.01 Natural Streams

Pursuant to Water Code Section 22280, the District will collect from a hydroelectric power producer with a rated plant capacity of 100 kilowatts or more, desiring to utilize District water flowing in a natural stream or waterway, a charge for the use of said water. The charge will be determined by multiplying ten percent of the standard weighted average price, as published by Pacific Gas and Electric Company pursuant to California Public Utilities Commission Decision Number 91109, by the energy produced by District water. If the charge, as determined above on an annual basis, is less than the standard weighted average price multiplied by 5,000 kwhs, the latter will be collected as a minimum charge for that particular twelve-month period.

Each water sale for power generation purposes will be covered by an agreement, signed by the power producer and approved by the Board. Articles of the agreement will cover insurance requirements, method of measuring District water and power produced, payments to District, hold harmless considerations, agreement termination, protection of District water, continued water use qualifications and other items deemed necessary by the District.

eff. 6/11/03

5.08 MUTUAL WATER COMPANIES AND SPECIAL DISTRICTS

The District will sell agricultural water to mutual water companies or special districts at its service point in accordance with these Regulations and provided the following conditions are met:

(a) Prior to approval by the Board, the developer must comply with Section 11.01.03 of these regulations which provide for the orderly development and extension of the District's raw water system.

(b) Mutual water companies or special districts that applied for service prior to July 2017 shall as applicable, have the following documents filed with the District: The Articles of Incorporation for a mutual water company, the resolution of formation for a special district, and the rules and regulations, or bylaws of the mutual water company or special district. The current list of property owners with map showing boundaries and water system and the name and telephone number of a contact person who is to be responsible for the distribution of water within these boundaries.

(c) Mutual water companies or special districts applying for service after July 2017 will be required to maintain its status, as applicable, as a mutual water company or special district and obtain and maintain registration with the appropriate State agency and LAFCO to be eligible for District service.

(d) Board approval of the entity, mutual water company or special district prior to the sale of water.

(e) Prior to March 15 of each year, submission of a written request for water containing the following information: Amount of water desired, county parcel numbers of the land on which crops are to be raised, type of crop, and acres irrigated.

Water sold under this policy is to be used only for agricultural use. It shall be the responsibility of the mutual water company, special district, or other entity to obtain any necessary licenses or permits from the County, State, or other such agencies as may be required to place the water to any other use. If the primary use of district water sold under this policy is for any purpose other than the irrigation of crops, this policy will not prevail.

(f) A 15% administrative fee will be charged to mutual water companies or special districts that applied for service prior to July 2017.

This fee will cover the cost of special handling of these accounts by the District to ensure that the mutual water company, special district, or other entity is in compliance with these Regulations. If a mutual water company, special district, or other entity elects to continue its registration with the State of California, then this administrative fee will not apply.

(g) All mutual water companies, special districts, or other entities who purchase water from the District for agricultural purposes only will be required to pay for their water in full prior to April 1 each year.

eff. 12/12/90, rev. 08/9/2017

5.09 PRORATION OF CAPACITY

When deemed necessary, due to lack of available capacity in District facilities, the Board may order that the available capacity be prorated. Proration shall be on an acreage basis, with the water sale rounded to the closest sale increment as shown in Schedule 5-G.

Due to the lead time required to prepare the tabulation for proration, and unless otherwise provided, a minimum of 90 days lead time shall be allowed prior to instigating a proration schedule. Any proration schedule that is adopted shall remain in effect for a minimum of 180 days, unless ordered otherwise by the Board. Any property owners choosing not to purchase and use any or all of their prorated share shall advise District. The unused shares shall be prorated and distributed among those property owners requesting additional water.

5.10 WATER AVAILABILITY LETTERS

5.10.01 General

Upon receiving a written request, the District will issue a letter giving the current status of water availability to a project or parcel of land. This letter will state whether the project is within the

District's boundaries, the project's entitlement to a prorated share of water, nearest raw water conduit, and will attempt to identify any potential problems that may be associated with making water available to the project. These letters will generally be effective for a one-year period from the date of issuance.

5.10.02 Administrative Processing Fee

An administrative processing fee of $50.00 shall be charged for water availability letters that require review by staff. This fee shall not apply for letters prepared for parcels with existing water or standby accounts. This fee may be waived if it is determined to be in the best interest of the District that the letter be issued.

eff. 12/12/90

5.11 RAW WATER OUTAGE ADJUSTMENT

When major rehabilitation or emergency work is required on a District raw water facility and a customer is affected by a continuous water outage for more than two (2) consecutive weeks, excluding weekends, that customer may request and receive an account adjustment.

The adjustment will be calculated by multiplying the number of outage days beyond the initial two (2) week period by the average daily water charge for the customer's size of service.

eff. 3/26/86

5.12 DROUGHT CONTINGENCY PLAN

Under drought conditions, the District adopted a Drought Contingency Plan on December 9, 1992. In order to provide for demand reduction goals for water supplies, deliveries will be based upon a schedule from April 1st Forecast in acre feet.

The Drought Contingency Plan will be followed according to its plan for maintaining a goal of 70,000 acre feet of water from water season to water season for carry over storage and for the health and safety of the District's domestic and agricultural water users.

The plan is described in the District Board and Management Policy Manual.

eff. 6/11/03

6SECTION 6

SECTION 6

RENDERING AND PAYMENT OF BILLS

6.01 TERMS OF PAYMENT

By these Rules and Regulations, the District intends to comply with the requirements imposed by Public Utility Code §16481.1 and Health and Safety Code § 116916. The procedures outlined in those statutes, as may be amended from time to time, take precedence over these Rules and Regulations.

6.01.01 Treated Water and Annual Raw Water

(a) Policy on Payment of Bills and Service Discontinuation. Sections 6.01.01, 6.03, 6.07 and 6.09 of this policy shall constitute the District's policy on discontinuation of water service in accordance with California law. These sections of the policy and the delinquency notice shall be available in English, the languages listed in Section 1632 of the Civil Code, and any other language spoken by at least ten percent (10%) of the people residing in the District's service area. The policy shall be posted on the District's website. The District shall annually report the previous year's number of discontinuations of residential service for inability to pay on its internet website and report this information, if required, to the State Water Resources Control Board.

(b) Payment of Bills. All water charges are due and payable on issuance of the statement and are delinquent ten (10) days thereafter. If not paid:

Twenty-five (25) days from issuance - A delinquency penalty charge at the rate of 1 ½ percent, will be applied to each account's unpaid balance and monthly thereafter until paid.

Forty-five (45) days from issuance - A delinquency notice will be mailed. Delinquency notices will be mailed to the occupant and to the landowner. The delinquency notice issued in accordance with this section shall include the following: 1) the customer's name and address, 2) the amount(s) delinquent, 3) the date by which payment or arrangement for payment is required in order to avoid discontinuation of service, 4) a description of

the process to apply for an extension of time to pay the delinquent charges, 5) a description of the procedure to petition for bill review and appeal, and 6) a description of the procedure by which the customer may request a deferred, reduced or alternative payment schedule, including an amortization of the delinquent service charges.

Sixty (60) days from issuance - A final turn-off notice shall be hand delivered to the service address and posted in a prominent and conspicuous location. A service charge as shown in Schedule 6-A shall be added to the account and included in the delinquent balance.

Seventy (70) days from issuance - Water service may be discontinued if the delinquent account balance has not been paid prior to the scheduled turn-off date. A charge, as shown in Schedule 7-A shall be made for turn-on. Once a service has been discontinued, the entire account balance must be paid prior to service being restored.

Customers can contact District customer service staff by calling 530-273-6185, to discuss options for averting discontinuation of service for nonpayment, including possible deferral and amortization.

Written request delivered to District customer service staff is the sole procedure by which residential customers may request a reduction in service charges. Reduction of service charges will be granted not more than once annually.

Customers may make advance payments to maintain water service during their absence. The billing will reflect the current credit balance until expended. Monies placed on deposit will not bear interest.

(c) Request for deferral or amortization for eligible customers. Written request, with supporting documentation, delivered to District customer service staff is the sole procedure by which residential customers may request deferred or alternative payment schedules, including amortization of service charges. Eligible customers are those that make written request and provide (1) certification of a primary care provider that discontinuation of residential service will be life threatening to, or pose a serious threat to the health and safety of a resident of the customer's service address; and (2) the customer demonstrates that they are financially unable to pay for water

service. A customer will be deemed financially unable to pay for service within the normal billing cycle if any member of the customer's household is a current recipient of CalWORKs, CalFresh, general assistance, Medi-Cal, Supplemental Security Income/State Supplementary Payment Program, or California Special Supplemental Nutrition Program for Women, Infants, and Children, or the customer provides proof that the household's annual income is less than 200 percent of the federal poverty level. Customers satisfying all of the foregoing criteria will be permitted to defer payment of delinquent charges by entering into an amortization agreement to allow the customer to pay the delinquent charges amortized over a three (3) month period, in addition to current charges that accrue for service each month. The amortization period in the agreement may be longer than three (3) months when District staff deems necessary, but shall not exceed twelve (12) months. If the customer fails to pay under the agreement for at least sixty (60) days, service may be discontinued with at least five (5) business days' notice posted at a prominent and conspicuous location at the property. Requests for deferral and amortization of bills are available to residential customers only and should be made prior to discontinuation of service by contacting the District customer service staff.

Upon the restoration of service, reconnection fees for customers that are deemed unable to pay in the normal billing cycle shall not exceed $50 for reconnection ("turn-on") during normal operating hours, and shall not exceed $150 for reconnection during nonoperational hours ("after hours). Reconnection fees shall be subject to an annual adjustment for changes in the Consumer Price Index beginning January 1, 2021.

(d) Termination of Water Service to Residential Occupants Served through a Master Meter. The District serves water to residential occupants through a master meter and individual meters in multi-unit residential structures and mobile home parks, where the owner, manager, or operator is listed as the customer of record. Where the owner, manager or operator of a multi-unit residential structure or mobile home park or similar facility is listed by the District as the customer of record and the account is in arrears, every good faith effort will be made to inform the residential occupants by means of a written notice by posting copies of the notice in each common area and at each point of access to the structure or mobile home park or similar such area.

eff. 6/93; rev. 6/11/03, rev. 8/10/05, rev. 09/12/07; rev. 02/27/19; rev 01/22/2020

6.01.02 Seasonal Irrigation Service

(a) Inside District Applicants. One-third of the total charges are due by April 1 or prior to receiving water. If there is a new owner, payment is due with the application.

eff. 03/11/98

One-third of the total charges due June 15, and if not paid by July 15, a notice of termination of service shall be mailed and a ten percent late payment penalty shall be added. If payment is not received by July 22, service may be turned off.

One-third of the total charges due August 15, and if not paid by September 15, a notice of termination of service shall be mailed and a ten percent late payment penalty shall be added. If payment is not received by September 22, service may be turned off.

A charge, as shown on Schedule 7-A, shall be made for turn-on.

(b) Outside District Applicants. One-half of the total charges are due by April 1 or prior to receiving water. If there is a new owner, payment is due with application.

One-half of the total charges due June 15, and if not paid by July 15, a notice of termination of service shall be mailed and a ten percent late payment penalty shall be added. If payment is not received by July15, service may be turned off.

A charge, as shown on Schedule 7-A, shall be made for turn-on

rev 01/22/2020

(c) Delinquencies. Applicants who are delinquent in the payment of water charges shall pay charges prior to District's acceptance of application for subsequent seasonal irrigation service or make satisfactory agreement with District for payment of same. An additional ten percent late payment penalty shall be added to all seasonal irrigation water accounts remaining unpaid on February 15.

eff. 6/11/03

6.01.03 Standby

All standby charges are due and payable on issuance of the statement. Standby charges are delinquent four months after issuance and may be transferred to the County Tax Rolls for collection.

eff. 6/11/03

6.02 MULTIPLE ACCOUNTS

Combining of two or more seasonal irrigation services for reduced rate purposes will be permitted when any of the following conditions are met:

(a) Applicant owns a single parcel of property and requires more than one seasonal irrigation service from different District facilities in order to serve this one parcel.

(b) Applicant owns more than one parcel or property which is served from the same canal system and operated as a single farming unit; and seasonal irrigation service is purchased for each parcel under separate applications. Property must be owned and listed on the county assessor's roll under the applicant's name.

eff. 5/27/87

6.03 BILLING TO THE AGENT/RENTER

Water service accounts will only be established in the name of the property owner. Direct billing to the agent/renter can be made upon receipt of a written authorization from the property owner that the agent/renter has been designated as the agent of the property owner. Once direct billing has been authorized, the renter/agent shall not be required to pay any amount that may be due on the delinquent account for a period prior to tenancy. In order for the amount due on delinquent accounts to be waived for the renter/agent, the renter/agent must provide proof that the delinquent account customer of record is or was the landlord, manager, or agent of the dwelling. Nevertheless, the landowner is ultimately responsible for all payment delinquencies. If the owner desires a duplicate of the water statement which is sent to the agent/renter, a handling charge as shown in Schedule 6-A, will be applied.

rev. 01/22/2020

6.04 NON-PAYMENT OF ACCOUNTS

Charges for water and other services, including penalties and supplemental charges, which are delinquent at the time specified for the delivery of outstanding charges to the county tax collector, may be added to and become a part of the annual assessment levied to the land upon which the service was rendered.

The District may refuse service to any land if outstanding charges for services already rendered such land are delinquent. (Section 22282.1 of the California Water Code)

The District may, under the provisions of Section 25806 of the California Water Code, record a lien on any or all lands owned or subsequently acquired by the person liable for such charges.

6.05 SECURITY DEPOSITS

The District may charge a security deposit, as shown in Schedule 6-A, for all outside District customers and for all inside District commercial accounts.

Deposits from commercial accounts shall be held for a period of one year. At the end of that period, the deposit may be applied to the account or refunded provided the account has been paid on a timely basis. Should a turn-off order be issued due to non-payment, a deposit equal to twice the highest bimonthly bill shall be required before the service can be turned on.Deposits from outside District customers, providing the account has been paid on a timely basis, are held for a period of one year. At the end of that period, the deposit may be applied to the water account and the balance, if any, shall be refunded.

eff. 8/12/87; rev. 6/11/03, rev. 09/12/07, rev. 02/24/16

6.06 RETURNED CHECKS

Checks returned by the bank unpaid shall be returned to the account. A return check fee, as shown in Schedule 6-A, shall be added to the water account and any other bank charges that may be assessed due to the returned item.

In the case where a delinquent bill is paid by check after the final turn-off notice has been delivered, and the check is returned unpaid by the bank, service may be immediately discontinued without further notice, provided that notice has been given in accordance with 6.01.01(b) of these Rules and Regulations. Prior to restoration of service, the account's entire balance and any bank charge for a returned check must be paid in cash or by credit card before service will be continued.

eff. 2/13/85; rev 01/22/20

6.07 DISCONTINUANCE OF SERVICE

6.07.01 Non-payment of Bills

Water service may be discontinued if a bill for services rendered has not been paid within the time prescribed by the District. Water service may only be discontinued for nonpayment of bills provided that notice has been given in accordance with Section 6.01.01(b) of these Rules and Regulations. Eligible customers facing discontinuation for nonpayment who are unable to pay during the normal billing cycle will be offered an opportunity to amortize their delinquent bill as provided in Section 6.01.01(c).

6.07.02 Noncompliance with the District's Regulations

If a customer fails to comply with any of these Regulations, the District will notify the customer of such failure. If the customer fails to comply within a reasonable time, the District may discontinue service.

rev 01/22/2020

6.07.03 Customer Service Discontinuance Request

If the customer gives the District a written request to disconnect the service, the District will notify the customer of the legal and financial impact of such request.

6.08 OUTSIDE DISTRICT CUSTOMER CHARGES

Any installation charges, or monthly charges listed as schedules in these Regulations, will be increased by twenty-five percent for outside District customers.

rev. 04/25/06, rev. 09/12/07

6.09 CONTESTING OR APPEALING WATER CHARGES

If a customer believes their bill, a charge thereon, or a determination of delinquency is incorrect, the customer should immediately contact District customer service staff by phone or in person. If the customer still believes the bill is incorrect after contacting District staff by phone or in person, they may promptly appeal a bill in writing to the District office no later than fifteen (15) business days of issuance of a disputed courtesy notice. Customer appeal rights will lapse and be summarily rejected if not received by the District, in writing, within fifteen (15) business days of the issuance of the courtesy notice. Timely written appeals must state the reason(s) why the customer believes the bill is incorrect and may be mailed, emailed or delivered in person. The District may request additional information from the appealing customer and/or may refer the dispute to the Water and Hydroelectric (WHO) Committee to conduct a hearing, if such process will help in rendering a decision on the customer's appeal. The District shall render a decision on written appeals in a timely manner, and the decision will be considered final with respect to all charges then existing on the disputed bill. Service shall not be discontinued while a written appeal is pending providing the customer has paid any portion of the bill that is not under dispute/review (i.e. the monthly fixed charge).

Written appeal to the District is the sole procedure by which a customer may request reduced water charges. A reduction in water charges will be granted only upon a finding that there was an error in computation of the customer's water charges.

rev. 01/22/2020

6.10 TIME AND MATERIAL CHARGES

The term time and material charges, as used in these Regulations, shall indicate a determination of costs based on the actual amount of labor, equipment and materials utilized, including applicable overhead factors. A deposit will be required based on the estimated costs and a final billing will be provided to the applicant or customer after completion. If final costs are in excess of the deposit, additional payment will be due within 30 days of receipt of final billing. If final costs are less than the deposit, the difference will be refunded.

6.11 UNSPECIFIED CHARGES

When these Regulations require that improvements or modifications be made by District at customer's sole cost and expense, the District may estimate these costs and make final charges based on the estimate, or it may utilize an actual time and material basis, as provided in Section 6.09, at the sole discretion of the District.

6.12 TERM PAYMENTS

The General Manager and the Finance Manager, together, are authorized to sign term payment agreements with individual property owners under the following guidelines:

(a) Up to a 120-month period and a maximum amount of up to $20,000.00 can be authorized for District fees and charges related to a new residential treated water service including but not limited to, capacity charges, meter and backflow prevention device installation charges, and buy-in fees to improvement districts. The rate to be charged on all term payment agreements is defined in Water Rules & Regulations 10.20.05 as a Surcharge Modifier. Late term payments will pay charges equal to the rate shown for the late payment penalty in Section 6.01.01 of these Regulations.

(b) Up to a 12-month repayment period can be authorized for customers to pay delinquent water account charges. A late payment penalty shall be charged at the rate shown in Section 6.01.01.

(c) The District has the right to terminate water service and remove the water meter upon failure to pay.

eff. 7/13/94; rev. 6/11/03; rev. 4/14/04; 3/25/2009; 6/8/2016, 5/23/2018

7Section 7

SECTION 7

CUSTOMER SERVICES

7.01 ROUTINE TURN ON AND TURN OFF

All customer requests for turn on and turn off shall be made in writing, or on Form 7-A available at the District office, signed by the property owner. Prior notice of 72 hours may be required in making routine turn on and turn off. A special service call fee, as shown in Schedule 7-A, is charged for making the turn on.

eff. 6/11/03

7.02 TURN ON FOR NONPAYMENT

A special service call fee, as shown in Schedule 7-A, shall be charged to the customer for turn on. Turn on of water service after being shut off for nonpayment may be made provided the account is paid in full, including the special service call fee, or if a satisfactory arrangement has been made prior to the turn on. The service may be turned on the same day if it can be done during District's normal operating hours; otherwise, the service will be turned on the following business day.

eff. 6/11/03; rev 02/27/19

7.03 EMERGENCY TURN ON

If water service is required in advance of the timing outlined for routine or nonpayment turn ons, a turn on may be arranged if the customer pays a special service call fee in advance. This fee shall be charged to the customer, as shown in Schedule 7-A.

eff. 6/11/03

7.04 SPECIAL METER READINGS

A customer requesting a special meter reading shall be charged the fee shown in Schedule 7-A.

7.05 SERVICE CALL

During normal operating hours, a customer requesting a service call concerning the pressure or quantity of water being received may be charged the fee shown in Schedule 7-A, if it is determined that District facilities are operating satisfactorily and the problem lies within the customer's facilities.

After normal operating hours, the fee, as shown in Schedule 7-A, shall be charged to the customer.

eff. 03/11/98

8Section 8

SECTION 8

FIRE SERVICES

8.01 GENERAL

Three types of fire services are available; public fire hydrants and private fire services served by treated water systems and public fire services served by raw water systems. These fire services shall be used only for the purpose of extinguishing fires and for testing fire suppression systems.

8.02 DISTRICT LIABILITY

The District does not guarantee or represent that a specific or certain minimum water pressure or volume of water will be available through a fire service. Fire services will be subject to the variations of water pressure and flow and to the temporary shutdowns required in the operation and maintenance of the system or any interruptions of operations in the system. The District shall be held in no way responsible for and the applicant and/or local fire fighting entity must agree to hold the District free and harmless from injury or damage caused by the lack of water or pressure available to a fire service.

8.03 LOCATION

8.03.01 General

All fire services will be located at a site meeting the approval of the District. In determining if a location is suitable for the installation of a fire service, the District will take into consideration operation and maintenance requirements and other factors deemed important, at any proposed site.

eff. 6/11/03

8.03.02 Treated Water System

(a) New Service. Faulty equipment or procedures which may be utilized by entities operating fire services on high pressure water mains can lead to physical injury of personnel, property damage, and can cause water main failures.

No new public fire hydrants will be allowed on District water mains where static pressures are 150 psi or greater. Prior to allowing public fire hydrants on water mains where static pressures are between 100 and 149 psi, the District will review each request on an individual basis. Approval or disapproval of each request, which will be made at the sole discretion of the District, will be based on consideration of such factors as size, type, and condition of water main, actual pressure, location of pressure-reducing stations, lower pressure water mains and other hydrants.

New private fire services, located on water mains where static pressures are 100 psi or greater, will not be allowed unless the applicant signs an agreement acknowledging the risks involved in a high pressure service, and holding the District free and harmless from liability and damages relating to the service. In addition, if the pressure is 150 psi or greater, the applicant will not be allowed to install any private hydrants or hose outlet stations on the fire service.

Fire pumper connections installed with proper check valves will be allowed.

eff. 10/24/90

(b) Existing Services. Existing public fire hydrants located on water mains where static pressures are 100 psi or greater may be eliminated when in the sole judgment of the District an adequate substitute water source, normally a lower pressure water main is available. The local fire fighting entity, in which jurisdiction of any public fire hydrant being considered for elimination is located, will be consulted prior to final determination; and a written 30-day notice will be provided prior to the actual removal or relocation of the fire service. All removal and re-plumbing costs will be absorbed by the District when such removal is the sole decision of the District.

eff. 5/23/90; rev. 6/11/03

8.03.03 Raw Water System

Due to potential of water loss and operation problems encountered with fire services off of the raw water system, the District will only allow such services under limited situations. If other alternatives, as determined by the District, are available to the fire fighting entity, no such service will be allowed.

No fire services will be allowed off of siphons or pipelines classified as transmission, as opposed to distribution lines. Locations subject to hydraulic conditions that restrict water flow will not be available for installation of a fire service.

eff. 3/13/85

8.04 PUBLIC FIRE HYDRANTS ON TREATED WATER SYSTEMS

8.04.01 General

An application, Form 8-A, must be signed by applicant and the local fire fighting entity in which jurisdiction the hydrant is located and approved by District prior to the installation, relocation or removal of a hydrant on a District water main.

The charge for the hydrant installation, relocation or removal, as set forth in these Regulations, shall be paid by the applicant and/or local fire fighting entity at the time the application is submitted to the District.

Fire hydrants installed under these Regulations shall belong to the District. The District may bear the expense of performing hydrant maintenance resulting from normal wear and tear when such conditions are reported to the District. The District may levy a charge for fire hydrant maintenance.

8.04.02 Installations

The charge shown in Schedule 8-A will be collected for all installations and provides for installation of a 2 ½" x 2 ½" x 4 ½" nozzle dry barrel hydrant conforming to AWWA Specification C502.

8.04.03 Hydrant Removal

The charge to remove a hydrant and discontinue the service will be as shown in Schedule 8-A.

There will be no charge to remove a hydrant or stand pipe classified as less than 5 ¼-inch barrel diameter when the removal is done in conjunction with the installation, at the same location, of a new hydrant.

eff. 6/11/03

8.04.04 Installation of a Hydrant Near Existing Hydrant

If a fire hydrant is to be installed at or near a location where there is existing hydrant coverage, as a requirement precedent to installing the new hydrant, the District reserves the right of discontinuing the existing hydrant and to levy the appropriate charge as shown in Schedule 8-A.

8.04.05 Relocation of Hydrant

The charge for the relocation of a hydrant will be the total of the charge for the hydrant elimination, Schedule 8-A, plus the charge for the installation of a new hydrant. No credit will be given for salvaged material unless the hydrant conforms to AWWA Specification C502 and can be reused, with only minor reconditioning, in which case a credit will be given as shown in Schedule 8-A.

Where the relocation or installation of a fire hydrant does not require a new connection to the main, the charge will be based on the District's actual cost.

8.05 PRIVATE FIRE SERVICE ON TREATED WATER SYSTEM

8.05.01 General

An Application, Form 8-B, must be signed by applicant and the local fire fighting entity in which jurisdiction the service is located, and approved the District prior to installation of the private fire service. The Applicant will make the basic determination as to the size of the service; however, the District reserves the right to limit the size of the service allowed. A fee to compensate the District for estimating the cost of the service will be collected at the time the application is submitted to the District. See Schedule 8-B.

After installation, the private fire service, up to and through to the outside edge of the vault, shall belong to the District.

eff. 1/1/94; rev. 12/08/04

8.05.02 Installation

Private fire services may be installed using three administrative processes, 1) District installed, or 2) Applicant installed using a Conveyance Agreement or 3) Applicant installed using an Applicant Constructed Private Fire Service Letter Agreement.

District installed private fire services shall be at the Applicant's cost as shown in Schedule 8-B.

Private fire services may be installed as a facility incidental to a water line extension being installed by a Developer under the provisions of a Section 10.03 Conveyance Agreement. The Applicant may also make arrangements to construct a private fire service to be connected to an existing water main by using the Section 10.03 Conveyance Agreement process in cases where the estimated installation costs exceed $15,000.

Fire services that are not incidental to a proposed water line extension project may be installed by the Applicant using a private contractor under the provisions of an Applicant Constructed Private Fire Service Letter Agreement, example of which is shown in Form 8-D. This method governs

plans, specifications, construction, inspection, and other requirements for the Applicant and his contractor. These letter agreements and conveyance of the completed fire service are subject to approval by the General Manager.

eff. 12/12/90; rev. 12/08/04

8.05.03 Service to More Than One Parcel

As long as all the parcels involved are properly fronted by a water main, as required under Section 10.01.02 of these Regulations, and upon the written application of all landowners, up to four contiguous parcels may be served by one private fire service.

Property owner(s) of each parcel being served by a Private fire service must have a valid application on file with the District indicating their responsibility for paying all charges and penalties, along with their responsibility for maintaining the system beyond the private fire service.

In certain instances the District, at its sole discretion, may permit or require a single parcel to have more than one private fire service connection. Examples include a shopping center/business center with varied tenant water requirements or two commercial buildings located on one parcel.

rev. 12/08/04, rev. 03/10/10

8.05.04 Charges for Water Service

No charge will be made for water used for extinguishing fires, but any water lost through leakage or for testing purposes or used in violation of these Regulations shall be paid for by the applicant at double the normal water consumption charges. If unauthorized water use or leakage continues for more than two billing periods after notification of the water use, the service may be discontinued.

A periodic charge, as shown in Schedules 8-C and 8-D, will be made to compensate the District for maintenance and the eventual replacement of the private fire service.

Pursuant to Section 6.04 of these Regulations, delinquent charges may be placed as a lien against the parcel, or all parcels benefiting from the service in the case of service to more than one parcel. User(s) of the service understand that the fire service may be discontinued for nonpayment of charges and accept all risk of such discontinuance for nonpayment.

eff. 1/22/86

8.06 PUBLIC FIRE SERVICE ON RAW WATER SYSTEMS

8.06.01 General

An application, Form 8-C, must be signed by the local fire fighting entity in whose jurisdiction the fire service is located and approved by District prior to installation of the service.

These types of fire services are subject to extreme variations in flow. Temporary, seasonal and extended shutdown periods may be required in normal operation of the system. Water delivered to the service may contain debris which could affect the quantity of water available to the fire service because of plugging or clogging.

8.06.02 District Installation

The District will install the outlet and shutoff valve immediately adjacent to the District facility at the applicant's cost.

8.06.03 Applicant Installation

The applicant will be responsible for construction of all facilities downstream from the shutoff valve, including pipeline, storage sump and hydrant.

8.06.04 Maintenance Responsibilities

District may bear the expense of performing maintenance resulting from normal wear and tear on its facilities when such conditions are reported to the District. The District may levy a charge for maintenance. Facilities downstream from the shutoff valve will be the responsibility of the applicant to maintain.

8.06.05 Discontinuing Service

The service shall be used only for extinguishing fires and no connections of any kind whatsoever, other than to hydrants and hose reels, shall be made or permitted to be made to the pipe(s) supplied by said service.

Discovery of any unauthorized service or any water leakage from the applicant's facilities will result in discontinuation of said fire service until corrective action is taken.

8.06.06 Charges for Water Service

No charge will be made for water used for extinguishing fires or for periodic flushing of the service to remove accumulated debris.

9Section 9

SECTION 9

CROSS CONNECTION CONTROL & BACKFLOW PREVENTION

9.01 GENERAL

The purpose and objectives of the District's Cross Connection & Backflow Prevention Regulation is to:

Purpose

- Protect the public water system at the service connection against any actual or potential cross-connection between the public water system and any source or system containing any substance that is not, or cannot be, approved as safe, wholesome and potable for human consumption;

Objectives

- Outline District and Customer responsibilities for protection of the public water system;
- Outline criteria determining when backflow protection is required;
- Specify requirements for backflow prevention assemblies to protect the water system;
- Comply with federal, state, and local laws and policies and allow the District to meet applicable regulatory requirements and standards.

These Regulations supplement and do not supersede local plumbing regulations, codes, ordinances, or other State regulations relating to water supply.

9.02 DEFINITIONS

9.02.01 Air Gap Separation

A physical vertical separation between the free flowing discharge end of a potable water supply pipeline and an open or non-pressurized receiving vessel. The air gap shall be at least double the diameter of the supply pipe measured vertically above the top rim of the vessel, and in no case less than one inch.

9.02.02 Approved Backflow Prevention Assembly (ABPA)

Any assembly that is currently included on the District's Approved Backflow Prevention Device list and that has passed laboratory and field evaluation tests performed by a recognized testing organization, which has demonstrated their competency to perform such tests to the California State Water Resources Control Board Division of Drinking Water.

9.02.03 AWWA Standard

An official standard developed and approved by the American Water Work Association (AWWA).

9.02.04 Backflow

A flow condition, caused by a differential in pressure that causes the flow of water or other liquids, gases, mixtures or substances into the distributing pipes of a potable supply of water from any source or sources other than an approved water supply source.

9.02.05 Customer

The owner or operator of a private water system served from the public water system.

9.02.06 Contaminant

A degradation of the quality of potable water by any foreign substance which creates a hazard to the public health or which may impair the usefulness or quality of the water.

9.02.07 Cross Connection

Any unprotected actual or potential connection between a potable water system used to supply water for drinking purposes and any source or system containing unapproved water or a substance that is not, or cannot be approved as safe, wholesome, and potable. By-pass arrangements, jumper connections, removable sections, swivel or changeover assemblies, or other assemblies through which backflow could occur, shall be considered cross-connections.

9.02.08 Cross Connection Control Technician

A District employee with current AWWA certification or District-approved organization with equivalent certification requirements.

9.08.09 Deactivated Well

Any well in which all pumping components including but not limited to pump, piping, and power supply shall be removed from the well casing. Additionally, the top of the well or well casing shall be provided with a cover that is secured by a lock or by other means to prevent its removal without the use of equipment or tools.

9.02.10 Double Check Valve Assembly (DCV)

An assembly composed of two single, independently acting check valves, two tightly closing shutoff valves located at each end of the assembly, and four test cocks for testing of the check valves.

9.02.11 Health Agency

The California Department of Health Services or the local health officer with respect to a small water system

9.02.12 Manual of Cross Connection Control

The most current edition of the Manual of Cross-Connection Control as published by the University of Southern California's Foundation for Cross-Connection Control and Hydraulic Research.

9.02.13 Premise

Any and all areas on a customer's premises, which are served or have the potential to be served by the public water system.

9.02.14 Point of Service Connection

The point of connection of a user's piping to the water supplier's facilities.

9.02.15 Pollution

An impairment of the quality of the water to a degree which does not create a hazard to the public health but which does adversely and unreasonably affect the aesthetic qualities of such waters for domestic use.

9.02.16 Reclaimed Water

Wastewater that as a result of treatment is suitable for uses other than potable use.

9.02.17 Reduced Pressure Principle Backflow Device (RP)

A backflow preventer incorporating not less than two check valves, an automatically operated differential relief valve located between the two check valves, a tightly closing shut-off valve on each side of the check valve assembly, and equipped with necessary test cocks for testing.

9.02.18 Reduced Pressure Principle Detector Assembly (RPDA)

Reduced Pressure Principle Detector Assembly (RPDA) shall mean a specifically designed assembly composed of a line-sized approved reduced pressure principle backflow prevention assembly with a bypass containing a specific water meter and an approved reduced pressure principle assembly. The RPDA is primarily used on fire sprinkler systems.

9.02.19 Unapproved Auxiliary Water Supply

Any water supply on or available to the premises other than the approved water supply. An Unapproved Auxiliary Water Supply includes, but is not limited to, a well, spring, pond, storage tank, or any other water source that is piped or captured in any fashion that would facilitate its use as an Unapproved Auxiliary Water Supply on the premises. An Unapproved Auxiliary Water Supply does not include a decorative or natural water feature that serves solely for aesthetic and/or recreational purposes and lacks piping and/or equipment that would facilitate its use as an Unapproved Auxiliary Water Supply on the premises.

9.03 DISTRICT RESPONSIBILITY

Regulations of the State of California Code of Regulations (CCR), Title 17 – Public Health state that the water supplier has primary responsibility for protecting the public water system from contamination and/or pollution occurring through back flow by preventing water from unapproved sources or any other substances from entering the distribution system. As a water supplier, the District shall protect the public water supply from contamination and/or pollution by implementing a Cross Connection Control Program.

The District fulfills its responsibility by requiring point of service connection protection at all existing service connections that have been surveyed and found to have existing actual

and/or potential hazards to the public water system. The District does not recognize internal cross connection protection programs and/or internal backflow protection assemblies in lieu of point of service connection protection as described herein. All new non-residential connections will be required to install District-approved backflow protection at the service connection.

The District shall conduct Cross Connection Control Surveys of existing unprotected premises and premises suspected to have existing inadequate backflow protection. If an actual or potential hazard is determined to exist, a backflow prevention assembly shall be installed by the District in accordance with these regulations. Existing premises not required to install backflow prevention assemblies as a result of a District Survey shall be subject to subsequent regular District Surveys for the purpose of confirming continued compliance pursuant to this program.

The District will install and maintain the required backflow prevention device for residential connections. Installation for non-residential connections will be coordinated with District staff. Maintenance of non-residential connections will be the responsibly of the District. Only devices selected by the District and approved by the University of Southern California's Foundation for Cross Connection Control and Hydraulic Research, or approved by the California State Water Resources Control Board Division of Drinking Water will be utilized.

The District shall inspect each backflow prevention device at least once a year. Only personnel certified for testing these devices by the California-Nevada Section of the American Water Works Association, the University of Southern California, or California State Water Resources Control Board Division of Drinking Water will perform the required tests. Repairs of an ABPA comprised of internal part replacement and flushing shall be performed by the District. The District will attempt to repair an assembly that does not pass annual testing. If the District is unable to repair the assembly, then a new ABPA device will be installed at the District's expense.

Costs incurred by the District for installation of a new backflow prevention device, as well as maintaining, replacing and testing these devices will be reimbursed by the water user to

the District. These costs are shown in Schedules 9-A, 9-B, and 9-C. Test results and maintenance records shall be maintained by the District.

9.04 WATER USER'S RESPONSIBILITY

The water user may be required to fill out a questionnaire regarding the degree of risk of backflow at the time water service is first requested and at other times deemed necessary by the District.

The customer shall provide the District and its agents with unimpeded access to backflow prevention assemblies for routine testing and repairs. Customer shall not, without District's prior written authorization, install any enclosure that impedes access to the assembly.

It is the further responsibility of the water user to inform the District of any change on its premises that might increase the risk of backflow into the District's treated water system.

9.05 MINIMUM CROSS CONNECTION PROTECTION REQUIREMENTS

The type of protection that shall be provided to prevent backflow into the District water supply system shall be a minimum of a Reduced Pressure Principal Backflow Prevention Assembly (RP) for all non-residential connections and Reduced Pressure Principle Detector Assembly (RPDA) for all non-residential fire suppression system connections, upgrades, and new installations. Service to premises that pose an actual or potential health hazard (contaminant) shall be protected with an air gap separation unless the District determines that based upon the level of hazard a RP is sufficient to protect the public water system. The customer may install a higher level of protection than specified by the District following prior written District approval.

9.06 MINIMUM BACKFLOW PROTECTION LEVELS

Minimum protection levels shall be determined by the District. The following list of circumstances shall require a minimum of a RP for backflow prevention and is not exclusive:

- All new non-residential connections;
- Premises determined by the District to have unusually complex plumbing configurations that cannot be adequately evaluated;
- Premises with limited access or that deny access to the District for internal

inspections;

- Existing non-residential connections where the Districts water facilities and connections are modified, upgraded or improved;
- Each service connection that supplies water to Premises on which any substance is or may be handled in such a manner as to permit entry into the public water system, including water originating from the public water system which is or may be subjected to deterioration in sanitary quality;
- Premises where there are irrigation systems into which fertilizers, herbicides, or pesticides are, or can be injected;
- Premises with internal pressure boosting systems;
- All sewage/wastewater treatment facilities and sewage lift stations.

The following list of circumstances shall require a minimum of a DCV for backflow prevention and is not exclusive:

- Residential premises with any Auxiliary Water Supply, whether or not it is interconnected with the public water system, except those premises with a Deactivated Well;
- Parcels having more than one service connection;
- Residential Premises where a cross connection exists, or the potential for one that could result in the pollution or contamination of the public water system.

Nothing in this Program shall be construed as affecting the customer's responsibility for meeting the local fire districts fire system flow requirements. Nothing in a local fire districts fire flow system requirements shall be construed as affecting customer's responsibility for meeting the requirements of this Program.

9.07 NEW NON-RESIDENTIAL SERVICE CONNECTIONS

A minimum of a RP shall be installed at all new nonresidential service connections.

9.08 EXISTING NON-RESIDENTIAL SERVICE CONNECTIONS

Existing unprotected non-residential connections are subject to District evaluation and onsite cross- connection control surveys. The District must be provided unimpeded access to perform

internal inspections for the purpose of determining cross connection hazards. If District access is impeded for any reason, then the District will install a minimum of a RP at the customer's expense to protect the public water system.

9.09 NEW NON-RESIDENTIAL FIRE SUPPRESSION SYSTEM CONNECTIONS

All new non-residential fire suppression system connections shall be protected with a District approved RPDA installed according to District specifications.

9.10 EXISTING NON-RESIDENTIAL FIRE SUPRESSION SYSTEM CONNECTIONS

Non-residential fire suppression systems currently protected with a minimum of a single detector check valve will be allowed to continue in service until such system is modified, updated, improved, or hazard classification is determined to require an RPDA. If existing protection is determined inadequate or is modified, improved, or updated as identified under this Program, the customer shall install a RPDA at the point of connection to District water system according to District specifications.

9.11 TEMPORARY METER CONNECTION

Temporary meter connections to District hydrants, blow-offs, or other District infrastructure shall be protected with a minimum of a RP. The location of the installed temporary meter connection shall be determined by the District in its sole discretion following review of request.

9.12 TEMPORARY CONSTRUCTION CONNECTIONS

Temporary construction connections to District water mains used for the purpose of testing and flushing non-District water lines shall be protected with a minimum of a RP. The RP shall be installed in accordance with the District's current Construction Standards and shall be inspected and certified by a District Cross Connection Control Specialist prior to use and annually thereafter until completion of project. Failure to contact District in a timely manner for annual certification may result in termination of connection to District's water main. A District Cross Connection Control Specialist, upon relocation, must retest each RP.

9.13 UNAPPROVED AUXILIARY WATER SUPPLY

Any parcel served by District water service that is determined to have an Auxiliary Water Supply, whether or not it is interconnected with the public water system, shall install a minimum of a RP.

9.14 PRIVATE WELLS

A private water well is classified as an Auxiliary Water Supply whether or not it is interconnected with the public water system unless it is a deactivated well. The customer may continue to use this Auxiliary Water Supply as long as a DCV has been installed at the point of service connection to District specifications. Parcels having inactive (locked off) District water service connections along with onsite Auxiliary Water Supplies shall be evaluated by a District Cross Connection Control Specialist prior to District water service reactivation. Continued use of any unprotected District water service shall require well deactivation as defined by this Program or destruction in accordance with current County requirements. In circumstances where customer does not currently utilize the well, but may seek to do so in the future, customer may elect to deactivate well as defined by this Program. To be considered a Deactivated Well by the District, customer shall remove all pumping components including but not limited to pump, piping, and power supply (if equipped) from the well casing. Additionally, the top of the well or well casing shall be provided with a cover that is secured by a lock or by other means to prevent its removal without the use of equipment or tools. Customer shall notify District prior to reactivation of well and shall be responsible for installing appropriate backflow protection as required by this Program prior to such reactivation. A Deactivated Well shall

also be subject to periodic evaluation by District staff to verify no reactivation has occurred. Nothing in this Program shall be construed to affect Customer's responsibility to comply with any other applicable regulations related operation and/or destruction of the well, including but not limited to those requirements of the County and the State of California.

New customers requesting District water service who also have a private water well on the parcel will be required to install a minimum of DCV prior to initiation of water service or deactivate the well as defined by this program. In circumstances where the private water well

is serving an existing structure for domestic purposes and the Customer has notified the District that he/she intends to destroy or deactivate the well upon receipt of District water service, a District Cross Connection Control Specialist must be present to observe physical disconnection of the well from its source prior to unlocking the installed District water service. Upon unlocking and initiation of water service, the Customer will be responsible for completing deactivation or destroying the well in accordance with current County requirements no later than sixty days following initiation of District water service.

9.15 RESIDENTIAL SERVICE CONNECTIONS

Any residential parcel determined to have a cross-connection hazard as defined in this Program shall be required to install an ABPA

9.16 DISCONTINUANCE OF SERVICE

The District may discontinue service of water to any premises and may physically disconnect the customer's piping from the District's water system if a backflow prevention device required by these Regulations is not installed, or if it is found that a backflow prevention device has been removed or bypassed, or for any other violation of these Regulations.

9.17 REDUCTION IN DEGREE OF PROTECTION

Where a change in the degree of hazard allows a customer to downgrade from a reduced pressure principle device to a double check valve assembly, the District, upon determining that the premises requires less protection, will reduce the bimonthly charge to that associated with the double check valve assembly. No refund or partial refund of original installation charges will be made. If at a later date a reduced pressure principle device must be reinstated, the customer will be charged retroactively the difference between the lower and higher monthly charges, as shown in Schedules 9-B and 9-C, plus an interest factor to be determined by the District.

Where a change in these Regulations or the degree of hazard allows a customer to eliminate the backflow prevention device, the District, upon determining that the premises no longer requires the device and with approval of the customer, will remove the device at District

cost and stop charging the bimonthly charge. No original installation charge refund will be made. If future circumstances require the reinstallation of a device, the full installation cost, as shown in Schedule 9-A, will be collected from the customer.

9.18 INCREASE IN DEGREE OF PROTECTION

Where a change in the degree of hazard requires upgrading from a double check valve assembly to a reduced pressure principle device, the customer will be charged the difference between the installation charges of the two devices, as shown in Schedule 9-A and will be subject to the higher bimonthly charges associated with the reduced pressure principle device.

eff. 6/11/03, rev. 04/25/06, rev. 09/12/07, rev. 8/12/2020

SCHEDULE OF RATES AND CHARGES — SCHEDULE 9-A
BY NEVADA IRRIGATION DISTRICT — EFFECTIVE JANUARY 1, 2020

BACKFLOW PREVENTION DEVICE - INSTALLATION CHARGES

ASSEMBLY SIZE	DCV [1]	RP [2]
¾”	$ 717.00	$ 1,222.00
1”	723.00	1,366.00
1 ½”	1,153.00	2,231.00
2”	1,194.00	2,856.00
3”	4,363.00	9,478.00
4”	12,251.00	12,056.00
6”	15,991.00	16,527.00
8”	23,093.00	20,877.00
10” AND UP	Actual Cost	Actual Cost

1 Double Check Valve Assembly

2 Reduced Pressure Principle Device

NOTE

Charges covering RPDA’s and double detector checks which are utilized on high risk private fire services can be found in Schedule 8-B.

Add 25% to all charges above for accounts serving lands outside the District (amount rounded to the nearest dollar.)

SCHEDULE OF RATES AND CHARGES — SCHEDULE 9-B
BY NEVADA IRRIGATION DISTRICT — EFFECTIVE JANUARY 01, 2020

BACKFLOW PREVENTION DEVICE – MONTHLY CHARGE

ASSEMBLY SIZE	INSIDE DISTRICT DCV*	OUTSIDE DISTRICT DCV*
¾”	$7.40	$ 9.30
1”	7.60	9.50
1 ½”	8.20	10.30
2”	8.50	10.60
3”	23.90	29.90
4”	27.90	34.90
6”	43.90	54.90
8”	56.70	70.90

* Double check valve assembly

SCHEDULE OF RATES AND CHARGES — SCHEDULE 9-C
BY NEVADA IRRIGATION DISTRICT — EFFECTIVE JANUARY 01, 2020

BACKFLOW PREVENTION DEVICE - MONTHLY CHARGE

ASSEMBLY SIZE	INSIDE DISTRICT RP*	OUTSIDE DISTRICT RP*
¾”	$ 8.50	$ 10.60
1”	9.60	12.00
1 ½”	12.80	16.00
2”	12.90	16.10
3”	27.20	34.00
4”	30.40	38.00
6”	41.50	51.90
8”	63.80	79.80

* Reduced pressure principle device

eff. 7/13/98; rev. 6/11/03, 04/25/06, 8/12/2020

SECTION 10

TREATED WATER SYSTEM EXTENSIONS

10.01 GENERAL

The District's objective is to ensure that the water system will be able to provide adequate water service to all present and future customers in an orderly manner.
eff. 8/11/99

10.01.01 Supplemental Definitions

(a) Extension. Any water system improvements required by the District to serve present and future customers in an orderly manner.

These improvements may include, but are not limited to, treatment plant facilities, domestic water storage, distribution and transmission water mains, pump stations, pressure reducing stations, private fire services, and other necessary appurtenances. Extensions may also include related raw water facilities needed to transport water to the treated water system.
eff. 8/11/99

(b) Developer. Any person desiring water service from the District which water service requires a system extension. A developer is considered a person, group or entity that is improving a parcel of land. District sponsored water line projects are not considered developer projects.
eff. 8/11/99; rev. 11/14/07

(c) Principal Property Frontage. Parcel frontage or combination of frontages on an adequate water main that best promotes the orderly development of the water system. Frontage along a primary access road will be a consideration in determining principal property frontage. The narrow frontage of a flag pole lot will not qualify as principal property frontage when not consistent with the orderly development of the water system.
eff. 8/11/99

(d) Adequate Water Main. A District water main with adequate capacity and pressure, and which is connected to a system with adequate source capacity.
eff. 8/11/99

10.01.02 Extension Requirements

(a) When a Treated Water System Extension is Required. The parcel must have an adequate water main along at least fifty percent (50%) of the principal property frontage, but not less than 50 feet. The District may require additional length or additional water mains at locations that best promote the orderly development of the water system. District's determination will be made on review of a submitted map.
eff. 8/11/99

(b) When a Treated Water System Extension is not Allowed. When an extension is not consistent with orderly development of the water system, an extension may not be allowed.
eff. 8/11/99

10.01.03 Water Availability

Developer must first make a written request for a letter of Water Availability. The request should include Assessor's Parcel Number(s), type of development, intended use of water, and fire flow requirements.

10.01.04 Service Feasibility Study

It may be necessary for the District to prepare a study in order to determine if service can be provided. If required, the study will be prepared at the sole cost of the developer on a time and material basis and will include, but not be limited to, computer analysis of the system and proposed improvements.

10.01.05 Developer Option

The developer may elect to take on the responsibilities of constructing the extension under provisions contained in Section 10.03 or, under certain qualifications, elect to have the District construct the extension as discussed in Section 10.04.

10.02 EXTENSION SPECIFICATIONS

10.02.01 Minimum Pipe Diameter

All new water main installations will consist of a minimum pipe size of eight inch inside diameter where it is anticipated that the long sides of loops of which the extension is a part, will exceed 600 feet or where the extension will remain unlooped. In cases where loops will be formed smaller than 600 feet, a six inch inside diameter pipe will be the minimum pipe size considered. Cul-de-sac pipelines, not exceeding 600 feet in length, may be less than the minimum size if extensions are not anticipated and adequate fire flow can be obtained from the main line. Pipe sizes within new subdivisions, where strong grid systems are created, will be determined by hydraulic analysis, taking into consideration consumptive demands and required fire flows.

Further upsizing of the minimum pipe sizes may be required to meet requirements of the developer or to meet future needs of the District.
eff. 3/27/85

10.02.02 Development Standards

The Board has adopted "Development Standards, Treated Water System." The standards include Developer Requirements, and Standard Specifications and Details. These requirements and standards are to be used by developers, as well as their consulting engineers and contractors for proper planning, designing and construction of treated water system extensions. The standards will also govern work undertaken by District crews; however, the General Manager may approve, in writing, any necessary deviations to these standards to accommodate in-house construction activities.

Proposed changes and additions to the Standard Specifications will be submitted to, and coordinated by, the District's Engineering Department.

Sections of the Standard Specifications adopted by the Board will require updating from time to time. Such changes must be approved by the General Manager and, at the General Manager's discretion, may require approval of the Board.

New sections being added to the Standard Specifications must be adopted by the Board.

Standard Details will be prepared, when appropriate, to help emphasize the requirements found in the Standard Specifications. The Engineering Department will, from time to time, revise the details to reflect approved revisions to the Standard Specifications. If required, Standard Details will be prepared for new sections added to the Standard Specifications.

"Development Standards, Treated Water System" are available on the District's website and at the District Main Office. Copies of the specifications and details for bidding purposes and use by a developer's contractor must be provided by the developer.

Full size Standard Details, in the form of reproducible Mylars, will be made available at the appropriate fee.

No changes shall be made to the Standard Specifications and Details without prior written District approval.
eff. 3/9/94; rev. 6/11/03; rev. 1/26/11

10.03 DEVELOPER CONSTRUCTED

10.03.01 Letter of Agreement

A letter of agreement between the District and the developer will be signed prior to review of the developer's plans. The letter of agreement will outline the procedure to be followed in allowing the developer to construct the extension. The developer must have the plans and specifications prepared by a licensed civil engineer. The plans and specifications must meet the District's approval. The developer will also provide a licensed civil engineer to act as the project engineer during the construction phase.

10.03.02 Environmental Requirements

The developer is responsible for preparing environmental documents per the California Environmental Quality Act (CEQA). Environmental documents completed in accordance with CEQA must be delivered to the District Engineering Department prior to approval of the improvement plans. The environmental documents shall describe all offsite work. For offsite work, the District shall either be the lead agency, or indicated in the environmental documents as the responsible agency.
eff. 1/26/11

10.03.03 Plan Check and Inspection Fee

The developer will be obligated to pay all plan check and inspection costs, as determined on an actual time and material basis. The developer shall submit an initial plan check and inspection deposit of five (5) percent of the estimated construction cost of facilities to be dedicated to the District, but not less than $2,000.

rev. 1/26/11

10.03.04 Conveyance Agreement

Within 90 days of written approval of the plans and specifications for the proposed mainline extension, the developer must enter into a Conveyance Agreement (agreement) with the District. The agreement will ensure that construction of the extension will be in accordance with the District-approved plans and specifications and ensure the conveyance of the extension to the District after its completion. Standard provisions covering a labor and material bond, maintenance bond, insurance, time limits and other requirements are shown in Form 10-A. Special provisions may also be added to the agreement as found necessary by the District.

At the discretion of the General Manager, an additional six months to begin work beyond that provided in the agreement, and an additional six months to complete work beyond that provided in the agreement, may be allowed.

Any additional time extensions, if granted, must be approved by the Board.

eff. 1/10/90; rev. 6/11/03; rev. 1/26/11

10.03.05 Performance Guarantee

The District may require the developer to furnish, prior to the start of construction, a performance bond or irrevocable letter of credit naming the District as obligee. Such performance guarantee must meet the District's approval as to form and surety utilized. This performance guarantee will be required if the District, at its sole discretion, requires assurance of the developer's performance. The guarantee amount will be as estimated by the District.

eff. 6/24/87

10.03.06 Easements

Developer shall provide to the District acceptable easements for the project prior to approval of plans. Easements will follow the District's standard easement format with appropriate legal descriptions. The District will record the easements for the project.

eff: 1/26/11

10.03.07 Construction

The extension must be constructed by a contractor holding a valid Class A (General Engineering Contractor) or C34 (Pipeline Contractor) California Contractor's license issued by the State Department of Consumer Affairs, Contractors State License Board. The District Engineer, or his/her representative, will inspect the work for compliance with the approved plans, specifications, and District standards. The developer will assume the cost of engineering and inspection services.

10.03.08 Approved Plans Expiration

Plans are valid for the time frames indicated in the Conveyance Agreement. Extensions will require re-review and approval by the Chief Engineer.

eff. 1/26/11

10.03.09 District Acceptance

The facility shall not be directly connected to District facilities until acceptance by the District. The Developer shall use a jumper assembly to separate the facility from the District until accepted. Exemption from the requirement for jumper facility requires approval of the Chief Engineer. Short main line extensions will generally be exempt at the discretion of the Chief Engineer. Upon completion of construction and compliance with all the terms and conditions of the conveyance agreement, and payment of all District plan check and inspection costs, the General Manager, on behalf of the District will accept conveyance and title of the extension. The District will then own, operate, maintain, repair and replace the improvements, except as specified during the maintenance warranty period. Upon acceptance of conveyance of the extension, the developer may apply for water service.

eff. 1/10/90; rev. 6/11/03; rev. 7/28/04; rev. 1/26/11

10.04 DISTRICT CONSTRUCTED

10.04.01 General

The developer may request the District to install any extension consisting of a water main installation which is less than 300 feet in length. In such cases, the District may take on the responsibility of designing and constructing the extension depending on the District's current work load.

rev. 1/26/11

10.04.02 Agreement

A written agreement between the developer and the District will be required. The agreement will contain clauses outlining the District's responsibility to prepare engineering plans and specifications and construct the extension, payment for construction, and other conditions as deemed necessary by the District. A letter agreement, not requiring Board approval, will be used if the estimated cost is equal to, or less than $15,000.

eff. 12/12/90; rev. 1/26/11

10.04.03 Construction Cost

Schedule 10-A of these Regulations will be used to determine the District's charge to design and construct the pipeline.

The cost, as determined herein, will be stipulated in the agreement as the final cost to the developer for construction of the extension.

rev. 1/26/11

10.04.04 Payment Schedule

At the time the agreement is signed, 50 percent of the construction cost must be paid to District. Actual construction will be scheduled only after the remaining 50 percent is received.

10.05 DISTRICT FINANCIAL PARTICIPATION

The developer may request, prior to consummation of a conveyance agreement, that the District participate financially for any portion of extension upsizing required by the District for future needs as opposed to developer's needs. All District participation is subject to availability of District funds. Participation including costs for engineering, land, easements and other ancillaries will not exceed the cost of a similar facility as listed in the latest District Capacity Charge Study subject to adjustments for inflation. Adjustments for inflation will be in accordance with District approved adjustments to capacity charges. In the case of water main installations, a pipe size less than the minimum pipe size, as discussed in Section 10.02.01, will not be considered adequate for the developer's needs.

Final determination of District participation will be made by the Board after review of the financial priorities of the District and included in the conveyance agreement.

rev. 1/26/11

10.06 REIMBURSEMENT FEE

The District will collect a reimbursement fee, where applicable, before granting a water service, including a private fire service, to a parcel that lies along and may be served directly from any pipeline extension installed under the provisions of these Regulations. The reimbursement fee for any parcel shall be determined by dividing the eligible costs of the improvement by the number of parcels to be served by the extension. The reimbursement fee for an extension shall be in effect for a period of 20 years from the date of execution of the Reimbursement Agreement between the Developer and the District. All monies collected will be returned to the Developer.

No reimbursement fees will be collected unless the Developer has signed a Reimbursement Agreement prior to District acceptance of the extension in the case of a Developer-constructed extension.

The District will, at its sole discretion, determine the parcels that may be served from the extension and therefore subject to a reimbursement fee. Parcels already receiving District treated water at the time a Reimbursement Agreement is signed will be excluded in determining the parcel reimbursement fee.

In case of a parcel split, the existing service will be assigned, at the sole discretion of the District, to one of the newly created parcels. The remaining new parcel(s) which may be served from the extension will be subject to the reimbursement.

The parcel reimbursement fee shall not be applied more than once to any parcel, of the cost of the extension. The cost of the extension shall be considered to be the Developer's out-of-pocket expenses directly and solely related to the installation of the extension, as determined by the District. The Developer's on-site improvements will be excluded from the cost of the extension.

eff. 04/11/2001; rev 6/11/03; rev 11/9/05; rev 03/28/18

10.06.01 Reimbursement for District Installed Pipelines

The District will collect a reimbursement charge, where applicable, before connecting a water service, including a private fire service, to a parcel which lies along and may be served directly from any pipeline installed by the District. The reimbursement charge for each parcel will be determined by specific methods established by District policy. The cost subject to the charge will be based on all costs to install the pipeline, including labor, equipment, materials, and incidentals for the design, installation, and inspection, legal costs, easements, environmental documentation, permits, and restoration. The reimbursement charge will be calculated to represent the proportionate costs of installing a distribution pipeline (8-inch diameter distribution pipeline, or larger if required for fire flow and other needs of the immediate area) for those parcels served and/or anticipated to be served directly by the pipeline, regardless of the actual pipe size installed by the District.

eff. 9/1/13

10.07 PREPAYMENT OF CAPACITY CHARGES

All treated water extensions serving greater than four parcels will require the payment of a minimum size meter capacity charge, as shown in Schedule 4-A, for each parcel to be served prior to District acceptance of the extension in the case of developer-constructed extension. District sponsored water line projects are not subject to the requirement of prepayment of capacity charges.

rev. 11/14/07

10.08 REQUEST FOR VARIANCE

10.08.01 Request Procedure

The applicant shall submit a completed Form 10-B Variance Request and pay an Administrative-Processing fee. The processing fee is non-refundable regardless of approval or denial of any part of the variance request.

The District is not a party to and accepts no liability or responsibility for rights in private property downstream of the District's meter. The applicant is solely responsible for the acquisition, retention (and compliance with all terms and conditions) of satisfactory rights, in favor of applicant from underlying landowners for applicant to install and maintain applicant's service line over private lands downstream of District's meter, and will defend and indemnify District from all claims, demands, and damages arising from applicants use and maintenance of the service line.
eff. 6/9/99; rev. 1/26/11; rev. 10/9/13; rev. 01/13/16

10.08.02 Review of Variance

The Staff Variance Screening Committee, consisting of representatives from Management, Engineering Department, and Operations Department, as determined by the General Manager, will review requests for variances from District Regulations pertaining to treated water systems.

The Staff Variance Screening Committee may unanimously deny a variance. Applicant may appeal per Section 10.08.04.

The Staff Variance Screening Committee may unanimously recommend variance approval and conditions of approval to the General Manager. The General Manager may then approve the variance and conditions of approval.

If the Staff Variance Screening Committee and the General Manager are not in unanimous agreement, they will submit the Variance Request to the Engineering Committee. The Engineering Committee may unanimously deny the variance, and the applicant may appeal per Section 10.08.04. If the Engineering Committee does not unanimously deny the variance, it will make recommendations to the Board of Directors. The Board of Directors' decision, by majority vote, will be final.

eff. 6/9/99

10.08.03 Expiration Date

All approved variances will have an expiration date of not more than two years. All conditions of approval must be met before the expiration date. Thereafter, the District will consider the variance expired. After expiration, any request for variance will be considered a new request subject to the processing fee and all District regulations at the time of the new request.

eff. 6/9/99

10.08.04 Appeal of Variance

The applicant may appeal a denied variance. All appeals must be in writing and received by the District within 60 days from the date of written notice of the District's decision. After 60 days, a request for appeal would be considered a new application requiring the applicant to submit a new Form 10-B and processing fee.

The first appeal would be made to the Engineering Committee, who may unanimously deny the appeal or forward the appeal to the Board of Directors with recommendations. If the Engineering Committee unanimously denies the appeal, the applicant may make a final appeal to the Board of Directors for a majority vote.

eff. 6/9/99

10.09 PRIVATE PIPELINE REPLACEMENT

10.09.01 General

In earlier years, the District allowed treated water service through private pipelines that served two or more parcels not fronting a District water main. As indicated in these Regulations, current requirements allow water service to a parcel only if it is adequately fronted by a District water main. Many of these aging private pipelines have experienced leaks that waste valuable District water supplies. In order to minimize this problem, the following participation program is available.

10.09.02 District Participation

District participation will be considered on any private pipeline elimination project where District water main replacement is involved. The new water main must meet all requirements as contained in this section of these Regulations. The District will determine, at its sole discretion, if it is in the

District's best interest to participate in any private pipeline elimination project. Upon determining to participate, and after signing an agreement with the private pipeline owner, the District will schedule the design and construction, taking into consideration the priority of other District activities.

eff. 2/12/92

10.09.03 Private Pipeline Owner Contribution

At the time an agreement is reached for District participation, the private pipeline owner(s) will pay, as the owner's full share of project costs, 25 percent of the amount determined by Schedule 10-A (Note that Schedule 10-A does not include costs associated with right of ways). The 25 percent contribution is in addition to any payments made for right-of-way purchases, and any related legal cost. These costs will be paid 100 percent by the private pipeline owner(s).

If applicable, reimbursement provisions may be included in the agreement pursuant to Section 10.06 of these Regulations. These provisions will allow the private pipeline owner(s) and the District to share the collected reimbursement fees based on the percentage of project cost paid by each party.

eff. 8/14/91; rev. 6/11/03; rev. 1/26/11

10.10 TREATED WATER SERVICE THROUGH NEW PUMP STATIONS, STORAGE TANKS, AND PRESSURE REDUCING STATIONS

10.10.01 General

The developer may request, prior to execution of a conveyance agreement, that the District participate financially for construction of pump stations, storage tanks, and pressure reducing stations where those facilities provide regional benefit (as determined solely by the District).
eff. 7/11/90; rev. 3/24/04, rev. 1/26/11

10.10.02 Applicability

Treated water service to parcels in new pump zones would only be applicable for areas with no upstream treated or raw water facility restrictions. The District reserves the right to limit service

to the new pump zones if this expansion leads to upstream facility expansions, which are not cost effective or are not reasonably reimbursed through collection of the District's standard capacity charge.

eff. 7/11/90; rev. 3/24/04; rev. 1/26/11

10.10.03 Design Considerations

In establishing a new pump zone, it will be the District's goal to minimize the size of pumps required to provide adequate service and to limit customer water outages. In most cases, a storage tank will be required to provide fire flow, peak hour demands as well as emergency storage. The physical size of the pump station, transmission main or storage tank may exceed the needs of the developer's property in order that additional parcels can be served. In order to adequately serve the new pump zone, the required storage tank site may be located outside of the developer's property. Installation cost of these facilities will be solely the responsibility of the developer subject to District participation and reimbursement per Sections 10.10.04 and 10.10.05. The developer is also responsible for all costs associated with the installation of the pipeline extension and any other appropriate fees and charges as set forth in these Regulations.

eff. 7/11/90; rev. 1/26/11

10.10.04 District Participation

Refer to Section 10.05 for participation in pipelines. To be eligible for District participation, the facilities must be constructed with the review and approval of the District.

All District participation is subject to availability of District funds. Participation including costs for engineering, land, easements and other ancillaries will not exceed the cost of a similar facility as listed in the latest District Capacity Charge Study subject to adjustments for inflation. Adjustments for inflation will be in accordance with District approved adjustments to capacity charges.

eff. 1/26/11

10.10.05 Reimbursement

Where pump stations, storage tanks and pressure reducing stations do not provide regional benefit, and are funded by the developer, and where customers outside of developer's land are allowed to be served from developer funded facilities (service directly connected), the developer will be entitled to reimbursement from said customers.

The District will determine the cost of the pump station and then divide this amount by the number of customers that can be served by the pump station including developer's land. The amount of reimbursement will not exceed the actual cost of the pump station. If it is determined by the District that excess pumping capacity is available, each additional customer obtaining service will be charged the previously described cost per customer. Any funds collected from this charge will be transmitted to the developer. The reimbursement will be available for a 20-year period from the date of District acceptance of the completed facilities.

No reimbursement fees will be collected from future customers unless the developer has signed a reimbursement agreement prior to District acceptance of the facility.

All monies collected will be returned to the developer by registered mail to the last address on record at the District office. The developer shall be responsible for keeping the District record current. Monies so delivered that are returned to the District shall be retained for the benefit of the developer for a period of one year. No other attempts will be made to locate the developer. At the end of the one-year holding period, the District shall return the principal amount to the then current owner of the parcel from which the reimbursement had been collected. The developer shall have no further claim to the monies. The reimbursement accounting system shall continue to indicate that the parcel has paid the reimbursement.

Reimbursements for pipelines are provided for in Sections 10.05 and 10.06 of these Regulations.

eff. 7/11/90; rev. 6/11/03; rev. 4/14/04; rev. 11/9/05; rev. 1/26/11

10.11 TREATED WATER SERVICE TO NEW PUMP ZONES

10.11.01 General

Having taken into consideration economic factors and physical restrictions, the District has established water service boundaries for each of its treated water systems. These boundaries indicate the extent that these systems may be expanded to provide treated water.

Areas containing parcels that would require the establishment of new pump zones to provide adequate water service were not included within the existing service area boundaries. These parcels were not considered economical to serve under the District's present water rate structure due to the excessive cost of operating and maintaining pump stations. The requirements contained herein, allows water service to be made available to parcels requiring new pump zones without creating an economic hardship on the District.

eff. 7/11/90; rev. 3/24/04

10.11.02 Applicability

Treated water service to parcels in new pump zones would only be applicable for areas with no upstream treated or raw water facility restrictions. The District reserves the right to limit service outside the established water service boundaries if this expansion leads to upstream facility expansions, which are not cost effective or are not reasonably reimbursed through collection of the District's standard capacity charge.

eff. 7/11/90; rev. 3/24/04

10.11.03 Design Considerations

In establishing a new pump zone, it will be the District's goal to minimize the size of pumps required to provide adequate service and to limit customer water outages. In most cases, a storage tank will be required to provide fire flow, peak hour demands as well as emergency storage. The physical size of the pump station, transmission main or storage tank may exceed the needs of the developer's property in order that additional parcels can be served. In order to adequately serve

the new pump zone, the required storage tank site may be located outside of the developer's property. Installation cost of these facilities will be solely the responsibility of the developer. The developer is also responsible for all costs associated with the installation of the pipeline extension and any other appropriate fees and charges as set forth in these Regulations.

eff. 7/11/90

10.11.04 Reimbursement

If other customers who are not part of the developer's land are allowed to utilize excess storage or pumping capacity in the new pump zone, a reimbursement will be due the developer. The reimbursement will be available for a 20-year period from the date of District acceptance of the completed facilities.

Use of excess water storage from the new pump zone by other customers will be compensated for by the District paying the developer the current storage tank component of the capacity charges collected from these other customers.

The District will determine the cost of the pump station and then divide this amount by the number of customers that can be served by the pump station. If it is determined by the District that excess pumping capacity is available, each additional customer will be charged the previously calculated cost per customer. Any funds collected from this charge will be transmitted to the developer.

The costs used to determine reimbursement shall be adjusted periodically to reflect changes in construction cost. These adjustments shall be governed by Section 10.06 of these Regulations.

Reimbursements for off-site pipelines are provided for in Section 10.06 of these Regulations.

eff. 7/11/90; rev. 6/11/03; rev. 4/14/04; rev. 11/9/05

10.12 TEMPORARY SERVICE LOCATION

A Temporary Service Location (TSL) may be approved by the Variance Screening Committee (VSC) subject to certain requirements as described herein. The intent of the TSL is to provide a temporary water service to eligible parcels until a future water main is installed to serve the parcel(s) in accordance with Section 10. A TSL is a temporary service facility and is not considered a permanent service location.

10.12.01 Eligibility

A property owner is eligible for a TSL when the property: a) is located within the District Boundary; b) has an existing residential dwelling on the property (served by a water source - other than District treated water) or on a vacant property with the owner having applied for a building permit; c) is not currently fronted by a District treated water main; d) where water service to the property can be obtained from an existing water main; and e) where the orderly development of District facilities will logically require a mainline fronting the subject property in the future.

The subject property must front on a public road right-of-way, utility easement, public service easement, or public/private road which will abut the alignment for such right-of-way or easement as proposed by the District, or a city or county.

rev. 03/22/2017

Only one (1) TSL will be allowed for each eligible parcel of land.

10.12.02 Application and Request for TSL

The applicant shall complete and submit Form 10-C, Temporary Service Location Request and an administrative processing fee as shown in Schedule 10-B, an 8½" x 11" scaled drawing or map showing the proposed temporary meter location and temporary service line. The processing fee is non-refundable regardless of approval or denial of the TSL Application.

rev. 03/22/2017

10.12.03 Review of TSL Application

The Variance Screening Committee (VSC) will review all TSL Applications to determine eligibility. The VSC may deny the TSL or recommend further action. If the VSC unanimously recommends the TSL, the application will be submitted to the General Manager for approval. The applicant will be notified of the District's decision, and if approved, the notification will include a list of requirements to be completed by the applicant prior to scheduling the installation of the meter for the TSL.

The VSC may unanimously deny a TSL. Applicant may appeal per Section 10.12.04.

If the VSC is not in unanimous agreement, it will present the TSL Request to the Engineering Committee for consideration. The Engineering Committee may approve or deny the TSL. If denied, the applicant may appeal per Section 10.12.04.

rev. 03/22/2017

10.12.04 Appeal of TSL Denial

The applicant may appeal the VSC's denial of a TSL Application. All appeals must be in writing and received by the District within 60 days from the date of written notice of the District's denial. Upon receipt of the request for appeal, the matter will be scheduled for consideration by the District's Engineering Committee or Board of Directors, as appropriate. The Engineering Committee may uphold or overturn the denial. If the Engineering Committee does not overturn the denial, the applicant may appeal the Committee's decision to the Board of Directors by written request to the Business Services Technician. The appeal will be scheduled for consideration by the Board of Directors at a regularly scheduled meeting of the Board of Directors.

rev. 03/22/2017

10.12.05 Requirements

Upon receipt of notice that the TSL Application has been approved, the applicant must comply with the following requirements to obtain a TSL service:

a. Pay any fees, or other monetary obligations, that are required for connecting to the existing District main for the temporary service (this may include obligations for existing reimbursement agreements, participation in an existing Improvement District or District Financed Water Line Extension (WLE) program, or participation in other financing districts that may pertain to the existing main);

b. Pay two current meter installation charges (representing installation charges for connecting the TSL to the existing main and the connection charge for eventually relocating the connection to the future main at the permanent location - fronting the subject property). The installation fees will be one (1) “Drop-in” fee and one (1) “Requiring Tap” fee as shown in Schedule 4-A;

c. Pay the current capacity charge for treated water (based on the size of meter requested);

d. Pay the current Treated Water Main (TWM) Contribution as defined herein;

e. Execute Water Service Agreement for Parcels not Fronting NID Waterline, if necessary;

f. Provide adequate easements or Rights-of-Way for the future water main and related appurtenances, if applicable;

g. In the case of vacant property, provide copy of building permit issued by appropriate agency (District will issue conditional Will Serve Letter as needed);

h. Execute Form 10-D, Agreement for Temporary Water Service and Contribution for Future Treated Water Main Extension;

10.12.06 Expiration of TSL Application

For a vacant property, an approved TSL Application shall remain in effect for a period of one (1) year following the date of approval by the District. For all other properties, an approved TSL Application shall remain in effect for a period of two (2) years following the date of approval by the District. If all requirements for the TSL have not been met by the expiration date, the TSL approval shall expire and become void.

10. 12.07 Extension of Approved TSL

A TSL Application approved for two (2) years may be extended by one (1) year. The applicant must submit a renewal application along with a processing fee as shown in Schedule 10-B which is non-refundable regardless of approval or denial of the TSL Renewal Application. The Renewal Application will be reviewed using the same process as the original application stated previously in this policy. Only one extension may be granted.

10.12.08 Treated Water Main Frontage Contribution

The Treated Water Main (TWM) Contribution represents the applicant's monetary contribution to the design and construction of a future pipeline that will eventually be installed by others fronting the applicant's parcel. This contribution will be retained by the District, and accounted for separately, to supplement funds needed by a future developer, waterline extender, or by any District sponsored financing efforts to install the future treated water main.

For each TSL Application, the TWM Contribution will be determined based on the projected size of a single family residential lot that can be subdivided from the subject property at the smallest size (or maximum density), as defined by the General Plan of the appropriate County or City, as follows:

TWM Contribution = $\sqrt{\text{size of lot (in square feet)}}$ x estimated cost of TWDM* ÷ 2

*TWDM = Treated Water Distribution Main

The TWDM multiplier as shown in Schedule 10-B will be determined by the Engineering Department and revised or amended periodically to reflect updated estimates for the cost to provide and install distribution pipelines.

For a General Plan designation that is not residential use, the TWM Contribution will be based on the actual current size of the subject property.

Examples:

A. Gross Area of Subject Property = 6.05 Acres
   General Plan Land Use = Rural Residential
   General Plan Density = 5 Acres (Min)

Size of lot = 5.0 Acres x 43,560 SF/AC = 217,800 SF

TWDM = (See Schedule 10-B)

TWM Contribution = $\sqrt{217,000}$ x TWDM ÷ 2 = $_____

B. Gross Area of Subject Property = 20.0 Acres

General Plan Land Use = Rural Residential

General Plan Density = 1 Acre (Min)

Size of lot = 1.0 Acre x 43,560 SF/AC = 43,560 SF

TWDM = (See Schedule 10-B)

TWM Contribution = $\sqrt{43,560}$ x TWDM ÷ 2 = $_____

10.12.09 Future Subdivision of Property

The future subdivision of property with a TSL shall be subject to the District's Treated Water System Extension Policy (District's Rules and Regulations - Section 10)). Upon subdivision, the District will credit the TWM Contribution to one of the property owners of the subdivided parcels/lots, the particular lot to be chosen at the District's discretion, and it will be assumed that the property owner of that lot will have met its obligation to the cost of the frontage mainline. The property owners of the remaining parcels/lots resulting from the subdivision will be required to pay the appropriate reimbursement for the mainline extension, based on the policy in effect at the time, without consideration of the TWM Contribution.

10.12.10 Installation of Future Treated Water Main

Upon the installation of the future treated water main abutting the subject property, the TSL applicant, or the successor, shall connect to a newly installed service lateral and meter, pursuant to the agreement referenced in 10.12.05(h).

Rev. 03/22/2017

10.12.11 Refund of other Monetary Obligations

If, at the time of TSL approval, the District collected monetary obligations that were required in accordance with 10.12.05 (a), and to the extent that the collected funds have not been used for their stated purpose at the time the subject service is moved to its permanent location, the District shall

refund the remaining funds. The recipient of the refund shall be to the property owner(s) on title to the subject parcel at the time of disbursement.

10.20 DISTRICT FINANCED WATERLINE EXTENSIONS

The goal of this Section is to permit expansions of residential water service to new customers by authorizing planning services and an advance of District funds to eligible neighborhood groups actively seeking the extension of treated water line(s) into their community. Assistance offered by this program includes informative group meetings, providing project design and construction services, providing advanced project funding, and providing a means for recovering project costs advanced by the District from the neighborhood over time. A project implemented through this Section shall be referred to as "District Financed Waterline Extension, or DFWLE.

10.20.01 DFWLE Eligibility

Neighborhood groups representing existing single-family residential dwellings, including duplex units, and to a limited extent, unimproved lots are eligible for the DFWLE program. The DFWLE program will not be used to finance treated water facilities for commercial or industrial land uses, or for lands under development through a use permit or for subdivisions, including planned unit or similar developments.

The intent of the DFWLE policy is to provide treated water to existing developed neighborhoods. Unless otherwise authorized, the number of unimproved parcels eligible for inclusion with any recognized neighborhood group will be limited to 20% of total potentially served parcels. A parcel shall be considered improved if a building permit has been issued for a residence on that parcel.

An eligible DFWLE must contain a minimum of 6 parcels, of which at least 5 must be improved, and a target maximum of 40 parcels. The minimum participation level will be at least 50% of the total parcels that the District determines could potentially be served by the DFWLE, rounded to the nearest whole number. Participation will be implemented through the execution of a DFWLE Funding Agreement as described in Section 10.20.10.

10.20.02 DFWLE Program Eligibility List

The District will maintain a list (Eligibility List) of neighborhoods requesting participation in the DFWLE program. To be placed on the Eligibility List, a neighborhood must submit its request in writing. The request must include 1) a contact person and telephone number, 2) parcel number of each participating parcel, 3) owner(s) name and address for each parcel, and 4) signatures from each owner.

Priority will be established based on the date of addition to the Eligibility List, and on active participation. As shown on the flowchart, the Engineering Committee will determine the next neighborhood group eligible for funding under the DFWLE program and the Administrative Practices Committee will evaluate funding. At that time, with a recommendation from both Committees, the Board of Directors will consider encumbering DFWLE allocated funds and assignment of a rate of interest representing interest foregone by the District had the funds allocated for the DFWLE project been otherwise invested. Upon determination of the interest rate, the Board of Directors will assign a surcharge modifier to the DFWLE project. (The surcharge modifier is calculated as determined elsewhere in this Section.) Funds encumbered for an individual DFWLE and funds allocated for all DFWLE projects shall be subject to the discretion of the Board and to limitations imposed by the Board of Directors as part of its budgeting authority, and may be reduced or restricted as the Board deems necessary given the other financial demands on the District.

Once a project is deemed eligible as a DFWLE project, the District will incorporate the general program provisions, complete a Water Service Study, establish the maximum charge for recovering project costs, and solicit neighborhood commitment through an informative group meeting.

10.20.03 General Program Provisions

Participation in the DFWLE program is voluntary. DFWLE project costs will be allocated equally among all parcels with potential service from the water line extension. The Board of Directors will

determine the level of funding available for all DFWLE projects on the Eligibility List on at least a yearly basis.

The District will advance the funds necessary to meet the costs for eligible DFWLE project(s) approved by the Board of Directors, less the total amount of good-faith deposits received. The District will recover the funds advanced through the application of the Service Extension Charge (SEC).

District funds advanced to the DFWLE program for participating parcels which submit a good faith deposit will be recovered through the application of a Service Extension Charge (SEC). The maximum cost recovery time period will be 30 years. The SEC will be collected as part of the participating parcel's treated water bill. The SEC will include a surcharge modifier to compensate the District for the loss of interest earnings as a result of funding participating parcel's share of the DFWLE costs. DFWLE costs allocated to parcels without an executed funding agreement will be subject to the Districts Reimbursement Policy #3175.

Costs eligible for advance by District under the DFWLE program include preliminary design, compliance with CEQA, design, rights of ways, construction, construction management, and capacity and meter installation charges for a domestic meter. The maximum amount of financeable project facility costs, including capacity and meter installation charges, is 90% of the total cost per participating parcel.

The applicant shall complete and submit an Application, Form 10-E, requesting to participate in the District Financed Waterline Extension Program, and the District will charge an administrative processing fee as shown on the application. The processing fee is non-refundable regardless of completion of the waterline extension project.

10.20.04 Service Extension Charge (SEC)

A Service Extension Charge (SEC) will be used to recover over time District funds advanced for DFWLE project costs from participating parcels that have paid a good faith deposit. The SEC will

be added to, and become part of the water bill for each of the participating parcels. The maximum SEC required to support project costs allocated to each participating parcel ("Total Costs") will be determined in the Water Service Study as defined in Section 10.20.06. The SEC will appear on the water bill and will be calculated following compilation of all project costs. The SEC will be calculated as 1) the total project costs, 2) divide by the number of potentially served parcels, 3) add the total capacity and meter installation charges, 4) subtract the total good-faith deposits received, 5) divide by the total number of anticipated billing periods within the cost recovery period, and 6) multiply by the surcharge modifier as determined elsewhere in this Section.

The SEC will be the same for all participating parcels within a particular DFWLE project and will not change once it first appears on the water bills.

10.20.05 Surcharge Modifier

A surcharge will be used to compensate the District for the loss of interest earnings as a result of lending on District projects. The modifier will be determined by the Finance Manager/Treasurer and based on the United States 5-Year Agency Bond Rates published by the District's Investment Broker on April 1. The surcharge modifier will be calculated as 1) the Capital Recovery Factor 2) multiplied by the number of billing periods within the project cost recovery period.

eff. 01/24/18, 5/23/18

10.20.06 Water Service Study

The District will complete a Water Service Study for the next eligible DFWLE project as determined by the Engineering Committee. Prior to beginning the study, the District will investigate the area surrounding the core neighborhood group to map the parcels which could potentially receive water service from the DFWLE. Should the District determine that expansion of the project to other parcels is necessary for the orderly expansion of the distribution system; the District will add the parcels to the DFWLE group.

The Water Service Study will include at least:

a. Project location map and preliminary facility layouts
b. Delineation of potential parcels served from DFWLE
c. Project costs; including preliminary design, compliance with CEQA, design, rights-of-ways, facilities construction, construction management, and contingencies.
d. District participation in facility costs if appropriate, pursuant to District policy (including the Capacity Charge Study).
e. Capacity and Meter Installation charges for a minimum-size water meter.
f. Maximum Total Charge
g. Maximum Service Extension Charge (SEC) required to amortize the Maximum Total Charge.

The cost estimates and SEC quoted in the Water Service Study will be honored for a minimum of 12 months, giving time to complete formation of the group, and execution of a Funding Agreement with each participating parcel.

The District will perform the Water Service Study without charge to the neighborhood group.

10.20.07 Initial Group Meeting

Upon completing the Water Service Study, the District will notify the group contact person and arrange for an initial group meeting. The District will present the findings of the study and answer questions.

10.20.08 Good-Faith Deposit

Should the neighborhood group demonstrate a willingness to proceed with the DFWLE project based on the maximum SEC quoted during the initial group meeting; the District will request an application and a good-faith deposit from each of the participating parcels. A good-faith deposit must be received from at least 50% of the benefitted parcels as calculated in accordance with Section 10.20.01 and will be applied against the total project cost so as to reduce the SEC for each participating parcel.

The deposit amount will be at least 10% of each participating parcel's share of the estimated project cost, including capacity and meter installation charges.

As established in the flowchart, after the District's request to all participating parcels to execute an application and make a good faith deposit, each participating parcel must sign and return a letter containing the terms and conditions of the deposit, and return the deposit with the letter. Should one or more prospective participating parcels fail to return the deposit amount and a countersigned deposit letter; the non-responsive parcel(s) will be removed from the neighborhood group list. If this process results in less than the minimum participation from the potentially served parcels as calculated in accordance with Section 10.20.01 within the allowed solicitation period, all deposits will be returned and the project will be removed from the eligibility list.

Once a good-faith deposit and executed letter have been collected from at least 50% of the potentially served parcels as calculated in accordance with Section 10.20.01, the District will request the owner(s) of each participating parcel to enter into a Funding Agreement. The District will also begin charging expenses against the project for inclusion in the Total Charge. Retroactive charges, representing costs incurred to that date by the District will not be applied to the Total Charge to be recovered under the Funding Agreement.

If, during development, but after receipt of the requisite number of good faith deposits, the project fails due in whole or in part to the actions or inactions of the participating parcels, the DFWLE will be discontinued and the amount of good-faith deposit that remains unused at the time will be split equally among participating parcels and returned. If the project fails due solely to the actions or inactions by the District, the total amount of good-faith deposits will be returned.

10.20.09 Easements - Subordination of Agreement/Easements

Concurrent with the submission of the good faith deposit, owners of participating parcels must agree that before the commencement of construction by District, and in no event later than the date of execution of a Funding Agreement, they will, when requested, convey to the District

easement(s), in the form prepared by the District, that the District determines are necessary for installation and maintenance of the waterline extension project. Owners must also agree to seek and obtain subordination from any mortgagor or holder of deed of trust or other lien holder of a security interest in the parcel, subordinating their security interest(s) to the District easement, the Funding Agreement, and the lien authorized under the Funding Agreement. For any necessary easements required for the waterline extension over property owned by other persons or entities, which are not participating parties but from whom an easement is required, the participating owner will seek to facilitate, in cooperation with other participating owners, the subordination of any mortgagors, trustors, or lien holders in favor of the District's easement. The Funding Agreement will specify that the District may refuse to execute the Funding Agreement, or if executed, cease the design and implementation of the pipeline extension financing project, with no further rights or obligations between the parties, in the event the District determines, at its sole discretion, that any failure to subordinate by a participating property owner's lender or the lender for a parcel owned by another person or entity renders the project not in the best interest of the District. The District is not required to initiate proceedings in eminent domain to acquire any easement or subordination required for the DFWLE. All required right of way documentation, including subordinations necessary for a pipeline extension project must be executed and effective prior to the start of construction.

In the event that a prospective participating owner cannot obtain subordination, they may submit a written request for waiver to the General Manager. The General Manager may modify or waive the requirement to obtain subordination including title insurance, in those circumstances where it is determined that the value of the District's interest is so small as to render such documentation economically unreasonable; the risk of foreclosure is so small that it is not considered a realistic risk; and/or the lender or senior lienholder provides the District with alternative assurance satisfactory to the General Manager, that the Districts easement will not be disturbed by a senior lienholder. The General Managers determination can be appealed by written request to the Administrative Practices Committee (APC), who may by unanimous action grant the appeal, deny the appeal, or forward the appeal to the Board of Directors with or without recommendation. If the APC denies the appeal, the applicant may make a final appeal to the Board of Directors. The

decision of the Board of Directors shall be made in its sole and unlimited discretion and will not be subject to appeal.

10.20.10 Funding Agreement

The owner(s) of each participating parcel must enter into a Funding Agreement, subject to approval by the Board of Directors, as found in Form 10-F attached to these regulations. Special provisions may be added to, or other revisions made to the Funding Agreement form as found necessary by the District under the circumstances of each transaction. A DFWLE Funding Agreement, fully executed by the interested landowner(s), must be delivered to the District and approved by the Board before it is effective. The Funding Agreement will be recorded against the participating parcel.

The Funding Agreement, once recorded, will authorize a lien by the District on the participating parcel for the purpose of collecting all delinquent water account charges, including the accumulated SEC.

Project design work will not begin until at least 50% of the potentially served parcels as calculated in accordance with Section 10.20.01 have executed a Funding Agreement, returned it to the District, and the agreement has been recorded with the County Clerk.

Fully executed DFWLE Funding Agreements and good faith deposits, as outlined in section 10.20.08, will be accepted up to 30 days from written notice of completion of a new treated water line as defined in Section 4.02.01. Funding Agreements received more than 30 days from the date of notice or without a good faith deposit shall be deemed invalid.

rev. 09/18/2020

10.20.11 Project Cost Compilation and SEC Adjustment

Following completion of construction of the DFWLE facilities, project costs will be compiled and a final Total Charge will be calculated. The District will analyze the project costs and issue a

project completion Cost Accounting Report. The report will recalculate, based on actual project costs, all program variables, including the SEC.

If the Cost Accounting Report indicates that the Total Charge requires an SEC greater than the maximum SEC appearing in the Funding Agreement, the SEC will remain unchanged and the District will pay the overrun. The District will not place further claim on participating parcels for the amount of the overrun.

If the Cost Accounting Report indicates that total project costs allow an SEC less than the maximum SEC appearing in the Funding Agreement, the District will adjust the SEC accordingly to the lower amount appearing in the report. The revised SEC and associated monthly payment will be included with the next water bill for each of the participating parcels.

10.20.12 Failure to Pay Treated Water Bill

Failure to pay a treated water bill as required in the Funding Agreement, including the SEC, will result in a delinquent account and, if not paid in accordance with District rules, a subsequent notice of turn-off, followed by turn-off. Upon issuance of a turn-off notice, whether or not the service is actually discontinued, all delinquent amounts will become due and payable. Treated water service will remain off and the SEC will continue to accrue, along with all other appropriate and customary charges, until the account has been paid in full. Unpaid balances shall constitute a lien against the participating parcel.

10.20.13 Pre-Payment of Project Costs and Charges

Upon completion of construction, compilation of project cost, and final SEC adjustment (if required), a participating parcel may pre-pay all or a portion of its Total Charge, including capacity and meter installation charges. Multiple pre-payments will be accepted without penalty from each participating parcel during the cost recovery period.

Upon receiving a pre-payment from a participating parcel, the time allocated for cost recovery will be reduced. The number of billing periods by which the cost recovery period will be reduced will

be determined by 1) dividing the pre-payment amount by the SEC amount, 2) multiplying the results by the surcharge modifier declared by the Board of Directors, and rounding down to the nearest whole number. The fraction remaining, if present, will be 1) multiplied by the SEC, 2) divided by the surcharge modifier, and 3) the resulting dollar amount will be credited to the participating parcel's treated water account.

Upon any sale, conveyance, assignment, or other transfer of the parcel, excluding transfer to a spouse, immediate family member, or to a living trust for estate planning purposes established by the current property owners, the Funding Agreement will terminate and any unpaid portion of the Total Charge will be immediately due and payable in full.

10.20.14 Subdivision of a Participating Parcel

Upon the subdivision of a participating parcel, the District will assign the existing treated water service account (including the SEC) to one of the newly created parcels or units. All other parcels or units created by the subdivision will be subject to the District Installed Waterline Reimbursement Policy when applying for a new service.

10.20.15 Reimbursement

The District will collect the proportionate share of the DFWLE cost as reimbursement from any parcel that did not execute a Funding Agreement as a condition of connection to the DFWLE pipeline. These parcels will be subject to the District Installed Waterline Reimbursement Policy #3175. The District will not collect reimbursement from non-participating parcels that have been granted a temporary service location (TSL). (Reference is made to the District's TSL policy.)

eff. 11/13/13, rev. 03/12/14, 01/24/18

SECTION 11

RAW WATER SYSTEM EXTENSIONS

11.01 GENERAL

11.01.01 Supplemental Definitions

(a) Extension. Includes any raw water system extensions, enlargements or improvements necessary to transport, store and/or deliver raw water. These improvements may include, but are not limited to, canals, ditches, pipelines, measuring and regulatory structures, pump stations, regulatory reservoirs and other necessary appurtenances.

(b) Developer. Any person desiring raw water service from the District, which service cannot be provided without an extension.

11.01.02 Purpose

The purpose of these Regulations are to provide for the orderly development and extension of the District's raw water system, to allow a means for developers to obtain some reimbursement for cost incurred in expanding the District's raw water system and to provide a method of compensating the District for added operation and maintenance costs.

11.01.03 Extension Review

Prior to approval of an extension of District's raw water system which will serve, or is contemplated in the future to serve, four or more parcels, a District review will be completed. This review, financed by the developer, will determine if it is in the best interests of the District to own and maintain the extension, and whether it will also be necessary for the developer to expand a portion of the existing District's raw water system, in order to provide raw water to the parcels desiring service.

11.02 PRIVATELY OWNED

If after review it is determined that the extension is to remain in private ownership, the developer must make satisfactory arrangements with the District to assure that the extension is operated and maintained in an efficient manner.

The developer will also be required to submit to the District sufficiently developed plans on his proposed extension to determine if the extension will affect the operation or maintenance of the District's raw water system. If, in the opinion of the District, a conflict exists, the extension plans must be modified to District satisfaction. No water service will be allowed until a District field check confirms that the approved plans have been followed in constructing the extension.

It is the responsibility of the owner to operate and maintain the private extension at no cost to the District. Users who waste water, either willfully, carelessly, or due to defective or inadequate private extensions, may be refused services until the conditions are remedied. The District will not maintain private extensions, but may make emergency repairs at the expense of the owner. The District shall have access to the private extension in order to ensure compliance with these Regulations.

11.03 DISTRICT OWNED

If the review determines that it would be in the best interest of the District to own the extension, the developer will be notified of this decision and will be required to follow the remaining portion of these Regulations.

Except as otherwise noted in these Regulations, all costs related to expanding and extending the District's raw water system to serve water to the developer's property are to be at the sole cost of the developer.

11.03.01 Capacity

All new extensions will have a minimum capacity of 5 cubic feet per second. The actual size of any new extension will be determined by the District based on design considerations and master planning determinations.

11.03.02 Other Design Considerations

The extension will be designed in accordance with District specifications. These specifications will include requirements for earth compaction, side slope stability, maximum allowed velocities, canal freeboards, berm widths and permissive radius curves and other details necessary to minimize operation and maintenance problems. The District will be the sole judge in determining the need for piped and lined sections of the extension, as well as other related structures.

11.03.03 Letter of Agreement

A letter of agreement between the District and the developer will be signed prior to review of the developer's plans. The letter of agreement will outline the procedure to be followed in allowing the developer to construct the extension. The developer must have the plans and specifications prepared by a licensed civil engineer. The plans and specifications must meet the District's approval. The developer will also provide a licensed civil engineer to act as the project engineer during the construction phase.

11.03.04 Plan Check and Inspection Fee

Plan check and inspection fees and deposits are stipulated in Section 10.03.02.

11.03.05 Conveyance Agreement

Upon written approval of the plans and specifications for the proposed extension, the developer must enter into an agreement with the District, which will ensure the District that construction of the extension will be in accordance with the District approved plans and specifications and to insure the conveyance of the extension to the District after its completion. Standard provisions covering a labor and material bond, maintenance bond, insurance and other requirements are shown in Form 10-A. Special provisions may also be added to the agreement, as found necessary by the District.

11.03.06 Performance Guarantee

The District may require the developer to furnish, prior to the start of construction, a performance guarantee as discussed in Section 10.03.04.

11.03.07 Construction

The extension must be constructed by a Class A California Contractor retained by the developer. The District Engineer, or his representative, will inspect the work for compliance with the approved plans, specifications and District standards.

The developer will assume the cost of engineering and inspection services.

11.03.08 District Acceptance

Upon completion of construction and compliance with all the terms and conditions of the conveyance agreement, and payment of all District plan check and inspection costs, the District will accept conveyance and title of the extension. The District will then own, operate, maintain, repair and replace the improvements, except as specified during the maintenance warranty period. Upon District acceptance of the extension, the developer may apply for water service.

11.03.09 Operation and Maintenance Considerations

If, at the time the extension review takes place, it is determined by the District that the District could not justify absorbing the additional operation and maintenance costs incurred because of the extension, arrangements to the District's satisfaction must be made so that customers from the extension would pay not only the standard water rates, but also an incremental charge based on actual operation and maintenance cost of the extension. These arrangements may include formation of an improvement district formed in compliance with Section 23600 of the California Water Code, or special district that the District may legally contract with, to enable the District to

be reimbursed for extension operation and maintenance costs. Final arrangements will be spelled out in the conveyance agreement.

eff. 6/11/03

11.03.10 District Financial Participation

The developer may request, prior to consummation of a conveyance agreement, that the District participate financially for any portion of extension upsizing required by the District for future needs as opposed to developer's needs. In the case of an extension, a capacity less than 5 cubic feet per second, as discussed in Section 11.03.01, will not be considered adequate for the developer's needs.

Final determination of District participation will be made by the Board after review of the financial priorities of the District and included in the conveyance agreement.

11.03.11 Front Footage Reimbursement

The District will collect a front footage charge, where applicable, before granting a water service to premises which lie along, and may be served directly from, any extension installed under the provisions of these Regulations. The front footage charge of an extension shall be in effect for a period of twenty years from the date of execution of the agreement between the applicant and the District.

The front footage charge shall not be applied more than once to any premises. Except for unusual conditions, premises already served at the date of installation of the extension will be excluded in determining the front footage charge, even though service may be made from the extension. The front footage charge will be determined by dividing the cost of the extension by the front footage of all premises which lie along and may be served directly from the extension. The cost of the extension shall be considered to be the Developer's out-of-pocket expenses directly and solely related to the installation of the extension, as determined by the District. The Developer's on-site improvements will be excluded from the cost of the extension.

rev. 8/22/06

SECTION 12

INTERFERENCE WITH DISTRICT FACILITIES

12.01 UNLAWFUL ACTS

For the protection of public water supplies, many offenses are by State Law made misdemeanors for which the offender may be criminally prosecuted. Attention is called to the following section of the Penal Code, making it illegal to interfere with or take water from any District conduit, without permission of the District, or to dump rubbish, filth, or any substance into a District conduit.

Section 498 — Stealing water, taking water without authority, or making unauthorized connections.

Section 625 — Taking water after works have been closed or meter sealed.

Section 592 and 627 — Interference with pipelines or conduits.

Section 607 — Injuring tanks, flumes, reservoirs, etc.

Section 624 — Breaking, cutting or obstructing pipes, etc.

12.02 ABATEMENT OF NUISANCE

No material affecting the quality of water shall be placed, dumped or be permitted to drain into a District conduit or reservoir. Obstructing the flow of water, scattering of noxious weeds, plants or grasses where it can roll, slide, flow, be washed or blown into a District conduit or reservoir is prohibited. All septic tanks, leach lines and structures must meet county conduit setback and

permit requirements, as well as the District encroachment permit provisions set forth in Section 14 of these Regulations. Violations of these requirements will subject offender to criminal prosecution.

12.03 DAMAGE TO DISTRICT PROPERTY

Any damage occurring to a District facility, or any property of the District, caused by a water user or any other person, must be paid for by that party.

12.04 UNAUTHORIZED TAKING OF WATER

Unauthorized connections, or the taking of water in an amount greater than applied for, and paid for, by any means, is subject to prosecution. For the first offense, water illegally taken will be billed at District rates and a penalty as shown in Schedule 12-A shall be assessed. For the second offense, the water illegally taken will be billed at double District's rates; and a penalty as shown in Schedule 12-A shall be assessed. In addition, the water service application will be conditioned for a three year period; and during this period, if these Regulations are not complied with, the service outlet will be removed and water service terminated. The foregoing shall be in addition to the right of criminal prosecution and the right to refuse service.

12.05 STORM WATER

The unintentional collection and conveyance of storm water by District facilities, such as Canals, Flumes and Ditches, present an ongoing and significant threat to system operations and private, public, and District facilities and properties. These threats routinely manifest as overflows, seepages, point discharges, and canal failures. In order to minimize and reduce impacts to the District, all land planning, development, and improvement review processes that the District evaluates, will require, at a minimum, that interested parties shall address the following:

- Maintain historic watershed flows within the parent watershed
- Eliminate direct, and minimize indirect contributions by requiring land developers to route storm water away from the District's facilities
- Reduce direct and indirect contributions by providing the appropriate infrastructure to prevent storm water infiltration into District facilities.
- Advocate development authorities at cities and counties to establish guidelines to insure that development improvements located upslope and downslope of District facilities be located, designed and constructed to accommodate high storm water flows and to avoid discharge into District facilities or minimize impacts from storm water to District facilities.

Existing developments requesting improvements will have current drainage impacts on District facilities reviewed, and may require improvements to protect existing District facilities. When existing storm water issues are identified, the District will remove or cause modifications of storm water routing to eliminate those impacts.

eff. 1/28/2015

SECTION 13

ACCESS, RIGHT-OF-WAY AND PROPERTY MANAGEMENT

13.01 SUPPLEMENTAL DEFINITIONS

13.01.01 Private Road

Any road which does not fall under the jurisdiction of a public entity.

13.01.02 Road Maintenance

Any work which entails the improvement of the drainage system and/or improvement in the traveling surface of the road.

13.01.03 Prescriptive Easement

The rights adhering to the District due to open, continuous and notorious use of land for a period of longer than five years, prior to 1972.

eff. 6/11/03

13.01.04 Spill Channels

Usually natural drains utilized by the District to spill waters from raw water facilities on a routine and/or emergency basis.

13.02 ACCESS TO FACILITIES AND LAND

13.02.01 District Access

By applying for or receiving water service from the District, each water user irrevocably licenses the District and its authorized employees and agents to ingress and egress over and across water user's lands by means of roads and lanes thereon, if available, otherwise by such route or routes as shall cause the least practicable damage and inconvenience to the water user. Such right of ingress and egress shall not extend to any portion of said lands which is isolated from District facilities by

any public road or highway now crossing or hereafter crossing said lands. If any portion of said lands is or shall be subdivided and dedicated roads or highways or such portion extends to District facilities, the right of ingress and egress on said portion shall be confined to such dedicated roads and highways. This right shall be for the purpose of inspection, examination, measurements, surveys or other necessary purposes of the District, with the right of installation, maintenance, repair, replacing, control and regulation of all meter, measuring devices, gates, turnouts, canals, pipelines or other structures necessary or proper for the transportation, distribution, storage or measurement of water. Means of access shall be by foot, vehicles and equipment operated or under the control of the District.

13.02.02 Private Facilities

District employees and representatives of the federal, state and local authorities shall have the right of ingress and egress of the customer's premises at reasonable hours for any purpose reasonably related to the furnishing of water service and the exercise of any and all rights secured to it by law, or these Regulations, including inspection of the water user's piping and equipment as to compliance. The water user shall provide and maintain reasonable access to all such equipment.

13.02.03 Land Surveys

Pursuant to Government Code Section 22229, District employees shall have the right to enter upon any land to make surveys and determine the location of any facility thereon and for surveys and investigation of soil conditions prior to the commencement of property acquisition.

13.03 PRESCRIPTIVE EASEMENTS

The District has, through operation of its system and long continued use, acquired certain property rights in lands within the District. These rights normally pertain to the use of canals, ditches, water lines and roads, which usage has been developed over a substantial period of time.

13.04 SPILL CHANNELS

The District has the right to utilize natural watercourses, ravines, and randoms, for the transmission of District controlled water, or for use for spillage or excess of storm water runoff. The use of such natural watercourses can take place at any time and without notice to the affected property owners.

No construction should take place within the bed or banks of a natural watercourse or random without determining the extent and frequency of District use of said watercourse, if any.

13.05 PRIVATE ROADS

13.05.01 Routine Use

The District shall not provide road maintenance on private roads except as required for District vehicles and equipment which may use the road on a routine basis for ingress and egress purposes. Road maintenance by District shall be limited to that required to keep it in a usable condition for District use only.

13.05.02 Specific Damage

When specific, identifiable damage is done to a private road by District's vehicles or equipment, the District shall restore the road to an equal condition as existed on the day prior to being damaged.

13.05.03 District Contribution

Any request for District participation to the cost of maintaining private roads must be made in writing and directed to the General Manager. The written request must contain information as to the road mileage involved, type of surface to be maintained, and the amount being requested from the District. Upon approval of the General Manager to contribute towards the road maintenance, the following formula will be used to compute the District's participation. The mileage shall be based on the preceding year's usage. The formula shall be reviewed every 5 years.

Miles per trip x trips per day x number of days per year =
Mileage per year x 10 cents = District Contribution

Minimum = $50.00 Maximum = $300.00

eff. 6/25/97; rev. 6/11/03

13.05.04 Right-of-Way Agreements

Nothing in these Regulations shall supercede or contradict any responsibilities of the District regarding maintenance of private roads which have been set forth in valid right-of-way agreements.

13.06 DISTRICT ROADS

Any roadway within a District easement, even though the roadway may be used by others, shall be maintained only to a condition as required for the District's use. In the event that these roads may be upgraded by other parties for their use, the District will not be responsible for damages to this road surface by District vehicles or equipment. Restoration of the road surface shall be at the sole discretion of the District for the use of District equipment and vehicles.

13.07 QUITCLAIMS

Parcels of land can be encumbered with easements granted the District which contain no facilities. Application may be made to the District on Form 13-A to quitclaim an easement back to the landowner.

A non-refundable fee of $250.00 is due at the time of application. The District will review the application, and if approved, will process a quitclaim deed. Prior to recording the deed at the appropriate county clerk's office, the applicant must pay the recording fee.

eff. 12/12/90; rev. 6/11/03, 10/27/10

13.08 EASEMENTS ON DISTRICT LANDS

Procedures for applying for easements on District lands is the same as outlined in Section 13.07. In addition to the non-refundable fee of $250.00, a payment for the value of the easement, as determined by the District will be required.

eff. 12/12/90

13.09 ABANDONMENT OF RAW WATER FACILITIES

13.09.01 General

The following regulations are to be followed by the District when considering raw water facility abandonments.

Abandonments are normally considered for facilities where operation costs greatly exceed revenue due to use by a limited number of customers, relocation of new facilities, and for facilities in urbanizing areas. Facilities in the second category are associated with problems involving water quality degradation, seepage, maintenance and public safety if open canal sections exist.

eff. 6/11/03

13.09.02 Resolution of Intention to Abandon

A proposed resolution will be prepared and made available for public review, along with related documents or studies pertaining to the abandonment. A public hearing will be held pursuant to District procedures to consider adoption of the resolution. A fourteen-day minimum notification period for the hearing will be required. All current District customers receiving water service from the affected facility will also be notified by direct mailing of the hearing date. The Board, at the hearing, shall consider all the evidence presented, along with any necessary environmental documentation. If the Board determines at the hearing that the facility should be abandoned, it will adopt the resolution.

eff. 6/11/03

13.09.03 Resolution of Facility Abandonment

After all necessary modifications, replumbings and other related work necessary to allow abandonment of the facility is completed, the Board will consider adopting this resolution, which will declare the abandonment of the facility and all related unneeded easements. The resolution will be recorded with the appropriate County Clerk.

eff. 6/11/03

13.09.04 Current Customers

The District, at no initial cost to the customer, will provide all current inside District customers on the facility to be abandoned, an alternate water supply in a manner as determined by the District. Future operation and maintenance costs associated with private facilities necessary for the new water supply plus water charges, if any, will be the financial responsibility of the customer. In

cases where a treated water supply is provided in place of the raw water supply, the customer may elect the option of being charged on the same raw water rate schedule in effect prior to the facility abandonment with no increase in water deliveries allowed. This option will terminate two years after the resolution of facility abandonment is adopted, and the customer will then be charged the appropriate treated water rate.

eff. 6/28/89; rev. 6/11/03

SECTION 14

PHYSICAL ENCROACHMENTS TO DISTRICT FACILITIES

14.01 SUPPLEMENTAL DEFINITIONS

14.01.01 Encroachments

Encroachments include, but are not limited to, buildings, bridges, culverts, fences, underground or overhead utilities, roadways, landscaping, docks, grading, and any other fixtures or appurtenances which may cross a District facility, reservoir, or right of way, which are in such proximity to District property or right of way as to interfere or potentially interfere with the District's performance of its responsibilities, including without limitation, the District's operation of its facilities, with necessary improvements or reconstruction of its facilities or which may cause unreasonable interference with District easement rights.

eff. 2/26/86; rev. 8/09/17; 7/22/20

14.01.02 Authorization

Written approval from the District, or an executed agreement with the District, authorizing the construction, installation, and existence of an encroachment, customarily in the form of an Encroachment Permit.

eff. 6/11/03; rev. 8/09/17; 7/22/20

14.01.03 Encroachment Permit

A permit issued by the District, authorizing the construction, installation, and existence of an encroachment, subject to the terms and provisions of the Encroachment Permit.

eff. 6/11/03; rev. 8/09/17; 7/22/20

14.01.04 Permittee

Any person issued an Encroachment Permit by the District, and any successors, assigns, heirs, and beneficiaries of that property benefitted by the authorized encroachment.

eff. 6/11/03; rev. 8/09/17; 7/22/20

14.01.05 Unauthorized Encroachment

An encroachment which is not authorized by a valid Encroachment Permit or written agreement.

eff. 6/11/03; rev. 8/09/17; 7/22/20

14.02 ENCROACHMENT AUTHORIZATION

14.02.01 Application for Encroachment

Prior to the construction or installation of a new encroachment, or replacement of an existing encroachment, the property owner(s) shall submit the Encroachment Application (Form 14-A) to the District for review and approval.

rev. 8/09/17; 7/22/20

14.02.02 Review of Encroachment Application

The District shall review the Encroachment Application for completeness. The District, in its sole discretion, may issue an Encroachment Permit subject to the terms and conditions which it deems necessary to protect its facility, easement, or right of way. The District may deny issuance of an Encroachment Permit if the encroachment would interfere or potentially interfere with the District's performance of its responsibilities and would restrict the District's abilities during an emergency situation.

eff. 6/11/03; rev 8/09/17; 7/22/20

14.02.03 Issuance of Encroachment Permit

An Encroachment Permit (Form 14-B) shall provide for the construction, installation, or replacement of an encroachment, and existence of an encroachment, as the case may be, all in conformance with the terms and provisions of the authorization. The existence of an encroachment is subject to the conditions, terms, and provisions set forth in the Encroachment Permit, and the Regulations of the District. An approved Encroachment Permit shall be signed by each of the property owner(s) and the District's General Manager.

Upon full execution, the Encroachment Permit will be recorded with the office of the County Recorder for the County in which the encroachment is to be located. Upon recording of the Encroachment Permit, the District will issue a construction authorization letter detailing any additional District requirements for construction or installation of the encroachment addressed in the Encroachment Permit. Encroachments shall follow the District's standard details or an approved design submitted to the District by the property owner(s).

Encroachment Permits shall be considered “covenants that run with the land,” and the terms and conditions thereof, together with the District policies contained in this Section 14, shall be binding on all successors, assigns, heirs, and beneficiaries of the property benefitted by the authorized encroachment.

eff. 6/11/03; rev. 8/09/17; 7/22/20

14.02.04 Construction Work

Construction or installation of any encroachment shall be performed only after the District's issuance of an Encroachment Permit and authorized by the District to begin construction per the construction authorization letter. The construction authorization letter shall provide for construction in accordance with District approved plans, standard details, and specifications. The Permittee shall assume and pay all costs and expenses of constructing, inspecting, and installing the encroachment, and shall remove all debris in the area or ground in which the encroachment exists, in a manner satisfactory to the District. If the Permittee fails to complete construction or installation of the encroachment to the District's specifications, requirements, and satisfaction within established time frames, the District may, at its discretion, either complete construction or

installation of the encroachment or stop the installation and cause the removal of the proposed encroachment. Should the District be required to complete construction, installation, or removal of the encroachment, the Permittee shall bear all costs and expenses for labor, materials, and equipment associated with such work.

eff. 6/11/03; rev. 8/09/17; 7/22/20

14.02.05 Water Outage Necessary for Construction

Prior to commencing construction and installation of an encroachment which shall lie within, or cross any District facility, reservoir, or right of way, which may cause a muddy water condition, fluctuation, or interference in any manner with the flow of District water, the Permittee shall submit a written request to the District with at least 14 calendar days advance notice of the need for an interruption in the flow of water, commonly referred to as a "water outage." The District may arrange with the Permittee to provide a water outage at such time convenient to the District so that the District may plan for and notify affected customers. If the District determines the outage may have a significant impact on its operations, the District may, at its discretion, delay an outage until after irrigation season. If in the District's opinion, the outage will cause a significant cost to the District, the Permittee will be required to pay such costs.

rev. 8/09/17; 7/22/20

14.02.06 Maintenance of Encroachment

Permittee shall be obligated to maintain, repair, operate, and replace the encroachment in accordance with the provisions of the Encroachment Permit, at all times, at said Permittee's sole cost and expense. All maintenance, operation, repairs, and replacement work performed upon the encroachment shall be conducted in a manner and to a condition satisfactory to the District. The District may require Permittee, at Permittee's sole expense, to perform maintenance, repair, reconstruction, or replacement of the encroachment necessary to ensure conformity with the Encroachment Permit.

eff.. 2/26/86; rev. 8/09/17; 7/22/20

14.02.07 District Repair or Replacement of Encroachment

The District shall notify a Permittee in writing of any deficiency in the operation, maintenance, or repair of an encroachment, describe the measures to be performed to cure the deficiency, and the timeline for repair. Should a Permittee fail or refuse to cure the deficiency within the specified time frame, the District may, at its option, either: 1) commence proceedings to revoke the Encroachment Permit; or 2) cure the deficiency using District labor and materials at the Permittee's sole cost and expense.
eff. 2/26/86; rev 7/22/20

14.02.08 Revocation

The District may revoke an Encroachment Permit after giving notice to the Permittee of the District's intent to revoke the Encroachment Permit and providing the Permittee with an opportunity to be heard concerning the proposed revocation. Should the Permittee fail to deliver to the District a written request for reconsideration within ten (10) calendar days from the date of the District's notice of intent to revoke, the Encroachment Permit shall be revoked by operation of this Rule and Regulation, and have no further force or effect.

Should the Permittee submit a timely, written request for reconsideration, the Engineering Manager will review the request for reconsideration. Should the Engineering Manager concur that the revocation is warranted, the Permittee can request that the matter be taken to the General Manager. If the General Manager upholds the revocation, the Permittee can petition their Director to have the matter considered before the full Board of Directors. The Permittee must make the petition to their Director within thirty (30) calendar days from the initial date of the District's notice of intent to revoke.

In conclusion of the request for reconsideration, the District may, in its discretion, either uphold revocation of the Encroachment Permit or impose terms and conditions for restoring the encroachment to an acceptable condition. The District shall issue its decision concerning the Encroachment Permit and provide notice of the decision to the property owner within ten (10) calendar days after the conclusion of the request for reconsideration. The District's decision shall be final and binding. A District decision to revoke an Encroachment Permit shall result in the

encroachment at issue being designated as an “Unauthorized Physical Encroachment” subject to immediate removal at the property owner's expense.

rev. 8/09/17; 7/22/20

14.03 UNAUTHORIZED ENCROACHMENTS

14.03.01 Notification and Penalty for District Removal or Replacement

The District shall exercise due diligence to determine the owner(s) of an unauthorized encroachment. Upon such determination, the District shall notify the owner(s) in writing, by registered mail, of the District requirements and to submit an application for the issuance of an Encroachment Permit. If, after 14 calendar days from the date the District issued written notification to the owner(s), the owner(s) have not submitted the proper application to the District, then the District may remove or replace the Unauthorized Encroachment at the owner's sole cost and expense. The District shall bill the owner(s) for all costs incurred to remove or replace any Unauthorized Encroachment, including staff time. This bill is to be paid within 30 calendar days of the invoice date. If the bill is not paid within the 30 calendar days or a payment plan has not been agreed upon with the District, the District will submit to the appropriate County to have a lien placed within property tax collections.

eff..2/26/86; rev. 8/09/17; 7/22/20

14.03.02 Immediate Threat to District Facilities, Reservoirs, or Right of Way

If the District determines that any encroachment or the condition thereof, poses an immediate threat to a District facility, reservoir, or right of way, the District shall notify the Permittee of measures necessary to cure the immediate threat. If the Permittee refuses or is unable for any reason to undertake the measures prescribed by the District within the indicated timeline, the District may take all actions necessary to cure the immediate threat, at the sole cost and expense of the Permittee.

rev. 8/09/17; 7/22/20

14.04 RESERVOIRS

14.04.01 Supplement to General Encroachment Regulations

The provisions within Section 14.04 supplement the general provisions of Section 14 to provide specialized requirements with respect to encroachments upon and in the vicinity of District reservoirs. In the event of a conflict between the rules and regulations set forth in this Section 14.04 and any other provision of Section 14, the rules set forth in this Section 14.04 shall control.

eff. 8/13/03; 7/22/2020

14.04.02 Scope

Section 14.04 applies to but is not limited to the construction, operation, and maintenance of authorized encroachments. The issuance of an Encroachment Permit shall not confer any right to conduct commercial activity on District property. Permittees shall comply with all District, federal, state, and local laws, regulations, and ordinances. No structures shall be permitted to be affixed or temporarily placed upon an encroachment including but not limited to gazebos, slides, decks, boathouses, and temporary or permanent fire pits.

eff. 8/13/03; 7/22/20

14.04.03 Projection of Adjoining Parcel, Defined

Only property owner(s) who have parcels adjoining a District Reservoir may be issued an Encroachment Permit to install an encroachment on a District Reservoir. Where convergence or divergence of sidelines results in conflicting areas of use, direction shall be given by the District, which may include a near perpendicular extension to the average shoreline that accommodates the interests of property owners as equitable as possible.

eff. 4/14/04; 7/22/20

14.04.04 Requirements for Dock Location, Design, and Installation

Docks will be permitted only for those parcels in existence at the time this section went into effect. If subsequent parcel split occurs, the permit will reside with the original parcel, and no additional permit will be allowed for the newly formed parcel. Docks will be permitted only adjoining the

District's lakeside property and shall be located adjacent to the parcel served. Only one (1) dock will be permitted for each such parcel. Upon approval of the District, combined docks may be constructed to serve multiple parcels. The docks shall be designed, constructed, and operated to accommodate no more than two (2) watercraft for each parcel served. See District Standard Details for Docks design and construction details. The Board of Directors may specify supplemental dock criteria when adopting a resolution authorizing docks on a particular reservoir.

eff. 8/13/03; rev. 4/14/04; 7/22/20

14.04.05 Application for Encroachment on District Reservoir

Prior to the construction or installation of a new encroachment, or replacement of an existing encroachment, the property owner(s) shall submit the Encroachment Application (Form 14-A) to the District for review and approval. The Encroachment application shall include a plot plan and dimensioned drawing of the encroachment to be installed.

14.04.06 Insurance

Each Encroachment Permit holder shall at all times maintain liability insurance coverage covering any permitted encroachment. Such insurance shall contain the following coverage:

(a) Minimum $1,000,000 for individual Dock and Gangway serving individual parcels.

(b) Minimum $1,000,000 for each parcel under separate ownership for joint use Dock and Gangway serving separately owned parcels.

Permittees shall, as a condition precedent to the issuance of an Encroachment Permit, provide a Certificate of Insurance to District verifying the required coverage and naming District as Additional Insured.

eff. 08/13/03; rev. 04/14/04; 7/22/20

14.04.07 Fees

The District has established annual fees for permitted Docks. Permittees shall promptly pay all applicable fees invoiced by the District; all docks associated with a parcel with unpaid annual fees may be subject to the immediate removal of the dock from the District's facility.

eff. 08/13/03

14.04.08 Water Quality Degradation

District and applicable agencies shall prosecute anyone contributing to the degradation of water quality on any District waters. Inspections shall be made to ensure that sewage and drainage systems are properly located in compliance with governmental regulations. Septic systems shall be installed and operated so that the effluent never reaches District waters. Any spills shall be reported to the District immediately.

No unattended fuel, oil, or chemical containers shall be located in the vicinity of District waters. Violation of this Section shall constitute grounds for revocation of Encroachment Permit with the removal of facilities and reference of the offending party to appropriate authorities for prosecution.

eff. 7/22/20

SECTION 15

RECREATION RULES AND REGULATIONS

15.01 USE OF RECREATION FACILITIES

The following campground Rules and Regulations are for public safety and all recreation facility users' comfort. Violators of these rules and regulations will be asked to leave, and no refund will be given.

Lower division recreation facilities are located on Scotts Flat and Rollins Reservoirs. Upper division recreation facilities are located on Bowman, Canyon Creek, Faucherie, Jackson Meadows, and Sawmill Reservoirs.

15.01.01 Release of Liability

All users of Nevada Irrigation District's (NID) recreation facilities are at their own risk and liability. In granting permission to enter and use the area and facilities, NID and the United States Forest Service (USFS) is not responsible for injury, theft, loss, or damage. By entering the campgrounds, all visitors agree to hold NID and USFS harmless from any claim, demand, or liability.

15.01.02 Respect for Property/Grounds/Amenities

It is illegal to destroy, damage, or deface any buildings, signs, fences, equipment, trees, etc. No cutting or removal of trees, plants, or rocks is permitted. Do not remove picnic tables, fire rings, or BBQs from campsites, picnic, beach, or store areas. This is theft. Violators of any of these offenses will be prosecuted.

15.01.03 Motorized Vehicles

Traffic signs governing speed and parking must be obeyed at all times. Vehicles must stay on designated roads. Vehicles must be licensed. No dirt bikes, mini bikes, OHV, ATV, quads, or golf carts are allowed to be operated in the facility.

15.01.04 Watercraft

All Watercraft Operators must comply with all state and local boating regulations and laws. Boating is permitted at watercraft owners' or operators' own risk. Knowledge of what type of boat or

watercraft are permitted in the lakes or reservoirs of use is the responsibility of the watercraft owner or operator. Watercraft owners or operators are responsible for damages or injury to watercraft, persons, vehicles, or structures. Use of the launching ramp, docks, and watercraft are at the watercraft owner's or operator's risk. No overnight boat camping is permitted on NID lakes or reservoirs.

15.01.05 Governing Laws

All guests must comply with federal, state, and local laws.

15.01.06 Behavior

Behavior offensive to the public, including but not limited to drunkenness, use of narcotics or marijuana, indulging in boisterous, loud, abusive, threatening, or indecent conduct or speech, is prohibited. Consumption of alcohol by persons under 21 years of age is illegal and constitutes grounds of eviction. No refunds will be given.

15.01.07 Refusal of Service

Recreation Staff reserves the right to refuse service and revoke all privileges pertaining to entry for any reason of misconduct, or any violation of the rules that are listed within these Rules and Regulations or that are posted within the facility. Refunds will not be given to persons who are asked to leave the facility for not following these Rules and Regulations.

15.02 RECREATION HOURS OF OPERATION

15.02.01 Gate Hours

Lower Division: Entrance Gate opens daily at 6:00 AM during the summer recreation season. Entrance Gate closes for campers' protection at:

- 10:00 PM - Sunday through Thursday
- Midnight - Friday and Saturday

If arriving after 10:00 PM, please be quiet and respectful to surrounding recreation facility users.

Upper Division: Entrance Gates are always opened during the summer recreation season. We ask that campers set up prior to the times listed below.

- 10:00 PM - Sunday through Thursday

- Midnight - Friday and Saturday

If arriving after 10:00 PM, please be quiet and respectful to surrounding recreation facility users.

15.02.02 Day Use Hours

Day use hours are from dawn to dusk. Day-use visitors are not permitted in campground areas.

Lower Division: Day Use is located in the picnic or marina areas of the facility.

15.02.03 Quiet Hours

Quiet Hours are strictly enforced, 10:00 PM to 8:00 AM. Generators, radios, and other sound-producing equipment may be operated from 8:00 AM to 10:00 PM, providing they are kept at a low volume so as not to be heard in nearby camp or picnic sites. Car radios may not be operated in the park if they can be heard outside the car. Persons violating this noise regulation will be asked to leave. Any decision made by Recreation staff concerning acceptable noise levels is final.

15.03 CAMPGROUNDS

15.03.01 Campsites

Lower Division: Check-in is 3:00 PM, and check-out is 1:00 PM. Campsite fees include campsite, one vehicle or RV, and eight people. There is an additional charge for extra vehicles. Each campsite is equipped with a picnic table and a fire ring. Campsites left in an unsatisfactory condition are subject to a $50.00 clean-up fee, pictures, and bills will be sent to the person on the reservation.

Upper Division: Check-in is 3:00 PM, and check-out is 1:00 PM. Campsite fees include campsite, one vehicle or RV, and six people. There is an additional charge for extra vehicles at East Meadows, Pass Creek, Findley, Fir Top, and Woodcamp Campgrounds. Each campsite is equipped with a picnic table, fire ring, and a bear box. Campsites left in an unsatisfactory condition are subject to a $50.00 clean-up fee, pictures, and bills will be sent to the person on the reservation. Camping is allowed in designated campgrounds only.

15.03.02 Reservations

Lower Division Reservations for the current year open on January 2nd. Groups of six or more sites, under the same name with the same stay time, can start booking the first Monday in December for

the following year. All reservations must be paid for in full at time of booking. We do not take campsite reservations from October 1st through December 31st. Campsites are on a first-come basis. The total number of reserved nights for all reservations may not exceed 14 days per year. Reservations made in excess of the 14 days will be cancelled. Upper Division Reservations can be made six months prior to the date of stay.

15.03.03 Refunds or Campground Concerns

There is a non-refundable reservation fee of $10.00 per site. We require 14-days' notice to cancel or change a reservation. There is a $25.00 cancellation/change fee per reservation. For groups of six or more sites, cancellation/changes are subject to a $100.00 cancellation fee, and requests must be received 30 days prior to the scheduled arrival date, or no refund will be provided. Changing dates or canceling due to weather are considered cancellations—no refunds for holiday reservations.

Cancellations, changes, or refunds for East Meadows, Pass Creek, Findley, Fir Top, or Woodcamp Campgrounds, please contact recreation.gov or call 1-877-444-6777. For Aspen, Silvertip, and Faucherie Groups Sites, please contact Scotts Flat Lake 530-265-8861. All other inquiries contact the campground camp host or call Scotts Flat Lake 530-265-8861.

15.03.04 Age Requirement

Children are welcome under the supervision and responsibility of an adult. All campsites must have a responsible adult (18 or over) in attendance.

15.03.05 Trash

Please keep a clean campsite. Dispose of all trash in designated containers. Dispose of sewage and drain waste in designated dump stations.

15.04 FISHING

15.04.01 Fishing

While fishing, all federal, state, and local laws apply.
Lower Division: No fishing on or around docks, boat slips, or beach areas. There is a five-fish limit.

15.05 SWIMMING

15.05.01 Swimming

Lower Division: Swimming is only allowed in designated swim areas and is not permitted around the boat launching or marina dock areas.

15.05.02 Diving and Swinging

No diving is permitted. This includes any diving from trees, docks, rocks or cliff areas. No rope swings or any object tied to trees is permitted.

15.05.03 Lifeguards

There are no lifeguards on duty, and all swimmers do so at their own risk. Parents must supervise children at all times.

15.06 PETS

15.06.01 Pets

Pets must be kept on a leash and attended to at all times. Dogs creating a nuisance are subject to eviction. Pets are not allowed in the swim or beach areas. Horses are not allowed.

15.07 PROHIBITED ACTIVITIES

15.07.01 Fires

Absolutely no open ground fires are permitted anywhere in the recreation areas or on shorelines. Fires are only permitted in established BBQ pits and campground fire rings. Do not leave fires unattended, build rock fire rings, or use hand lanterns or tiki-torches. Any person who allows a campfire to escape from the container is liable for any damages of property caused by the fire. These may include fire suppression, rescue, and emergency medical services costs incurred in fighting the fire. Fire restrictions may be imposed at any time due to hot, dry weather conditions, at which time campfires and charcoal fires will not be allowed.

15.07.02 Fireworks and Firearms

No fireworks or firearms are permitted at any time. This includes BB guns, airsoft guns, pellet guns, slingshots, paintball guns, and bows and arrows.

15.07.03 Other Prohibited Activities

Hunting, metal detecting, and drone flyovers are prohibited throughout recreation areas, lands, and reservoirs.

15.07.04 Glass Containers

No glass containers are permitted on the beach.

eff. 06/26/2019 7/22/20

APPENDIX A

2021

INDEX TO SCHEDULES

SCHEDULE OF RATES AND CHARGES
BY NEVADA IRRIGATION DISTRICT

SCHEDULE 4-A[1]
EFFECTIVE JANUARY 1, 2021

TREATED WATER SYSTEM
STANDBY CHARGES AND CONNECTION FEES

STANDBY CHARGES[2]: $6.00 per month per parcel

CONNECTION FEES[3], Non-Commercial[4] use

Drop In (Existing Meter Box and Water Service Lateral)

		--------Capacity Charge--------	
Meter Size	**Installation Charge**	**Parcels In District Prior to 03/01/2007**	**Parcels Annexed to District After 03/01/2007**
5/8”	$ 681.00	$ 11,164.00	$ 14,972.00
3/4”	723.00	16,076.00	21,560.00
Domestic Meter & Fire Meter Installation			
5/8” & 1”	$ 1,450.00	$ 11,164.00	$ 14,972.00
3/4" & 1”	1,492.00	16,076.00	21,560.00

Installation Requiring Tap to Main*

		--------Capacity Charge--------	
Meter Size	**Installation Charge**	**Parcels In District Prior to 03/01/2007**	**Parcels Annexed to District After 03/01/2007**
5/8”	$ 5,423.00	$ 11,164.00	$ 14,972.00
3/4”	5,464.00	16,076.00	21,560.00
1”	5,551.00	28,581.00	38,231.00
1 ½”	5,877.00	64,293.00	86,545.00
2”	6,092.00	114,318.00	153,323.00
Over 2”	DETERMINED BY DISTRICT		
Domestic Meter & Fire Meter Installation			
5/8” & 1”	$ 5,859.00	$ 11,164.00	$ 14,972.00
3/4" & 1”	5,900.00	16,076.00	21,560.00

*Service Lateral Installation Cost

$67.40 per foot of service lateral installed per standard detail
(in addition to meter installation cost)

NOTE:

Add 25% to all charges above for existing accounts serving lands outside the District (amount rounded to the nearest dollar.) The District does not presently offer treated water service to new accounts serving lands outside the District.

[1]BOD 01/25/2017; 09/13/2017; 06/27/2018; escalated annually by Construction Cost Index
[2] BOD 12/12/1990, 12/09/1993; Rules & Regulations Section 4.02.01
[3] Rules & Regulations Section 4.04
[4] Rules & Regulations Section 4.01.04

SCHEDULE OF RATES AND CHARGES
BY NEVADA IRRIGATION DISTRICT

SCHEDULE 4-A (CONTINUED)
EFFECTIVE JANUARY 1, 2021

TREATED WATER SYSTEM
STANDBY CHARGES AND CONNECTION FEES (CONTINUED)

CONNECTION FEES: Commercial, Industrial, Municipal and Multi-Unit Master Meters[5]

	-----Installation Charge-----		
Meter Size	**Drop-In (Existing Meter Box and Water Service Lateral)**	**Installation Requiring Tap to Main***	**Capacity Charge**
5/8”	$ 681.00	$ 5,423.00	Requires Water Demand Analysis - See Below
3/4”	723.00	5,464.00	
1”	769.00	5,551.00	
1 ½”	1,050.00	5,877.00	
2”	1,258.00	6,092.00	
Over 2”	DETERMINED BY DISTRICT		
Domestic Meter & Fire Meter Installation			
5/8” & 1”	$ 1,451.00	$ 5,859.00	Requires Water Demand Analysis - See Below
3/4" & 1”	1,492.00	5,900.00	

*Service Line Installation Cost

$67.40 per foot of service line installed per standard detail (in addition to meter installation cost)

Capacity Charge

Fees will be based on an engineering analysis of expected peak day water capacity provided by the developer’s engineer. The District will review the report for acceptance. If accepted, the District will utilize the report to calculate fees based on the peak capacity in Equivalent Residential Units (5/8 inch meter). The 2014 Adopted Capacity Fee Study indicates a peak day capacity of 1,250 GPD per 5/8 inch meter or equivalent (p. 12).

An example of calculation is as following:

Approved Meter Capacity by developers engineer: *6250 GPD*
Equivalent ERU Calculation: *6250 GPD/1250 gal per ERU = 5 ERU*
Capacity Fee Calculation: *5 ERU X $11,164/ ERU = $55,820 for capacity fees*

NOTE:

Add 25% to all charges above for existing accounts serving lands outside the District (amount rounded to the nearest dollar.) The District does not presently offer treated water service to new accounts serving lands outside the District.

[5] Rules & Regulations Section 4.01.03

SCHEDULE OF RATES AND CHARGES
BY NEVADA IRRIGATION DISTRICT

SCHEDULE 4-B
EFFECTIVE JANUARY 1, 2021

MISCELLANEOUS METER SERVICE CHARGES

TESTING[6]

Meter Size	Deposit	Effective Date
5/8” to 3/4"	$30.00	02/11/2015
1” AND ABOVE	DETERMINED BY DISTRICT	02/11/2015

UPSIZING/DOWNSIZING

A special service call as shown in Schedule 7-A will be charged to cover labor costs as discussed in Sections 4.07.01 and 4.07.02.

RELOCATING

Meter relocations meeting the conditions set forth in Section 4.07.03 (a) (not requiring a new tap to the water main nor other extra ordinary effort) will be accomplished at the rate indicated under “Drop-In to an Existing Meter Box” schedule.

Meter relocations meeting the conditions set forth in Section 4.07.03 (b) (requiring a new tap on the water main) will be accomplished at the rate indicated under “Installation Requiring Tap to Water Main” schedule.

ABANDONMENT

Customer requesting new meter installation at a location other than existing box and curb stop or requesting meter relocation will be charged an abandonment fee of $402.70 in addition to applicable meter installation fees. Existing box and curb stop will be removed and the area backfilled. Customer will be responsible for re-vegetation or landscaping.

NOTE:

Add 25% to all charges above for existing accounts serving lands outside the District (amount rounded to the nearest dollar.)

[6] Rules & Regulations Section 4.06.09

SCHEDULE OF RATES AND CHARGES
BY NEVADA IRRIGATION DISTRICT

SCHEDULE 4-EI & 4-FI[7]
EFFECTIVE JANUARY 01, 2021

NONCOMMERCIAL / COMMERCIAL, INSIDE DISTRICT

Charges for treated water meeting state health standards, delivered through a metered connection.

Service Size:	**5/8”**	**3/4"**	**1”**	**1 ½”**	**2”**	**3”**	**4”**	**6”**	**8”**
Monthly Fixed Service Charge:	29.33	44.00	73.34	146.67	234.68	469.35	733.36	1,466.72	2,346.75

Volumetric Service Charge: ($ per hundred cubic feet (hcf) per billing period)		
First	5 HCF per billing period	2.42 per HCF
Over	5 HCF per billing period	3.13 per HCF

Volumetric Service Charge During a Drought Declaration: ($ per hundred cubic feet (hcf) per billing period)				
Drought Stage*:		**2**	**3**	**4**
First	5 HCF per billing period	2.99 per HCF	3.71 per HCF	4.93 per HCF
Over	5 HCF per billing period	3.87 per HCF	4.80 per HCF	6.37 per HCF

* Per the Nevada Irrigation District Drought Contingency Plan

State & County Mandated Fee $1.90

[7] Board Resolution 2019-06

SCHEDULE OF RATES AND CHARGES
BY NEVADA IRRIGATION DISTRICT

SCHEDULE 4-EO & 4-FO[8]
EFFECTIVE JANUARY 01, 2021

NONCOMMERCIAL / COMMERCIAL, OUTSIDE DISTRICT

Charges for treated water meeting state health standards, delivered through a metered connection.

Service Size:	**5/8”**	**3/4"**	**1”**	**1 ½”**	**2”**	**3”**	**4”**	**6”**	**8”**
Monthly Fixed Service Charge:	36.67	55.00	91.67	183.34	293.34	586.69	916.70	1,833.40	2,933.44

Volumetric Service Charge: ($ per hundred cubic feet (hcf) per billing period)		
First	5 HCF per billing period	3.03 per HCF
Over	5 HCF per billing period	3.91 per HCF

Volumetric Service Charge During a Drought Declaration: ($ per hundred cubic feet (hcf) per billing period)				
Drought Stage*:		**2**	**3**	**4**
First	5 HCF per billing period	3.74 per HCF	4.64 per HCF	6.16 per HCF
Over	5 HCF per billing period	4.84 per HCF	6.00 per HCF	7.96 per HCF

* Per the Nevada Irrigation District Drought Contingency Plan

State & County Mandated Fee $1.90

[8] Board Resolution 2019-06

SCHEDULE OF RATES AND CHARGES
BY NEVADA IRRIGATION DISTRICT

SCHEDULE 4-G
EFFECTIVE JANUARY 01, 2021

RESIDENTIAL CONDOMINIUM, INSIDE DISTRICT

Charges for treated water meeting state health standards, delivered through a metered connection to existing Auburn Greens residential condominium units.

Monthly Fixed Service Charge:	**29.33**
Monthly Off Rate Fixed Service Charge*:	**22.00**

*plus usage

Volumetric Service Charge: ($ per hundred cubic feet (hcf) per billing period)		
First	20 HCF per billing period[1]	0.61 per HCF [2]
Over	20 HCF per billing period	0.78 per HCF [2]

[1] 5 HCF per unit
[2] 1/4 of non-commercial usage rate

Volumetric Service Charge During a Drought Declaration: ($ per hundred cubic feet (hcf) per billing period)				
Drought Stage*:		**2**	**3**	**4**
First	20 HCF per billing period	0.75 per HCF	0.93 per HCF	1.23 per HCF
Over	20 HCF per billing period	0.97 per HCF	1.20 per HCF	1.59 per HCF

* Per the Nevada Irrigation District Drought Contingency Plan

State & County Mandated Fee $1.90

SCHEDULE OF RATES AND CHARGES SCHEDULE 4-H[9]
BY NEVADA IRRIGATION DISTRICT EFFECTIVE JANUARY 1, 2014

TANK OR TEMPORARY CONSTRUCTION WATER SERVICE FROM AN OPEN CANAL AND/OR FIRE HYDRANT

GENERAL

1) The application charge of $100.00 is nonrefundable.
2) The minimum monthly charge shall be $85.00.
3) Applicants who do not turn in tank tally sheets and/or meter readings by the 10th of each month, for the previous month's usage, will be billed at two (2) times the minimum monthly charge or the estimated usage. Billing under this schedule shall not create a credit for future delivery of water.
4) This class of water is not to be used for domestic purposes except in an emergency situation as determined by Nevada Irrigation District.

TREATED WATER

1) Application will automatically be terminated at end of calendar year.
2) A deposit of $900.00 will be collected for the meter and wrench assembly and is refundable after the water used is paid in full, the hydrant has been inspected to determine that no damage has occurred, the meter and fire hydrant wrench have been returned undamaged and all damages to District facilities have been paid in full. Any default on the conditions of the application will result in forfeiture of the deposit.
3) Treated water will be billed at 2.5 times the rate shown in Schedule 4-EI.
4) Meter readings shall be turned into the District office at the first of each month.
5) The minimum monthly charge or the monthly billing for water usage, whichever is greater, will be levied until the meter is returned.
6) Applicant will be responsible for backflow prevention as shown in Schedule 9-A.

RAW WATER

1) Application will terminate at the end of each year unless requested by customer by Dec 10.
2) Raw water will be billed at twice the rate shown in Schedule 5-F.
3) Tank tally sheets shall be turned into the District office at the first of each month.
4) The minimum monthly charge or the monthly billing for water usage, whichever is greater, will be levied until District is advised in writing to close out the account.

[9] Rules & Regulations Section 4.01.02, 5.01.08

SCHEDULE OF RATES AND CHARGES
BY NEVADA IRRIGATION DISTRICT

SCHEDULE 4-I[10]
EFFECTIVE JANUARY 01, 2021

MONTHLY OFF RATE CHARGES, TREATED WATER SYSTEM

NON-COMMERCIAL & COMMERCIAL – INSIDE DISTRICT

RATE SCHEDULE	METER SIZE	OFF RATE
1	5/8”	$ 22.00
2	3/4"	33.00
3	1”	55.01
4	1 ½”	110.00
5	2”	176.01
6	3”	352.01
7	4”	550.02
8	6”	1,100.04
9	8”	1,760.06

State & County Mandated Fee $1.90

NON-COMMERCIAL & COMMERCIAL – OUTSIDE DISTRICT

RATE SCHEDULE	METER SIZE	OFF RATE
1	5/8”	$ 27.50
2	3/4"	41.25
3	1”	68.75
4	1 ½”	137.51
5	2”	220.01
6	3”	440.02
7	4”	687.53
8	6”	1,375.05
9	8”	2,200.08

State & County Mandated Fee $1.90

[10] Rules & Regulations Section 4.09

SCHEDULE OF RATES AND CHARGES
BY NEVADA IRRIGATION DISTRICT

SCHEDULE 5-B
EFFECTIVE JANUARY 1, 2021

RAW WATER SERVICE OUTLET INSTALLATION[11]

All raw water service connections will be made after proper application and payment is made to the District in accordance with the attached schedule for the requested service.

CANAL SERVICE BOX

SERVICE RANGE	BASIC INSTALLATION CHARGE	EXCESS PIPE LENGTH CHARGE[1] (PER FOOT)	
1/2 to 25 miners inches	$ 1,316.00	2”	$ 6.30
Relocation or upsize cost	811.00	3”	7.30
26 to 40 miners inches[2]	2,176.00	4”	7.90
Relocation cost	1,236.00	6”	11.40
Over 40 miners inches	Actual Cost	8”	20.50

[1] Where the outlet on a canal service exceeds 20 feet in length, the applicant is charged at the indicated rate per foot for all excess footage in addition to the basic installation charge.
[2] The District reserves the right to utilize a different type of measuring device on these size services at a cost to be determined by the District.

ORIFICED SERVICE IN RAW WATER PIPELINE OR MANIFOLD

Service Range	Basic Installation Charge*
Amount of water available will depend on manifold pressure, using 2 inch meter flanges or Dole flow control and 2 inch gate valves and air release.	$ 1,219.00
Any service requiring pipe size over 2”	Actual Cost

* In those instances where the District determines that a screening device is needed in the orificed service to prevent excessive clogging, such screening device shall be the sole cost of the customer (District Regulation 5.04.02 b).

NOTE:

Add 25% to all charges above for existing accounts serving lands outside the District (amount rounded to the nearest dollar.)

[11] Rules & Regulations Section 5.04

SCHEDULE OF RATES AND CHARGES SCHEDULE 5-C
BY NEVADA IRRIGATION DISTRICT EFFECTIVE JANUARY 1, 2010

RAW WATER SERVICE OUTLET PERIODIC CHARGES

ACTIVE ACCOUNT (With Purchase of Water) -	$48.00 per year charge for each outlet in excess of one.
ACCOUNT CHARGE (Without Purchase of Water) -	$72.00 annual charge on all inactive raw water accounts, plus a $72.00 annual charge for each additional outlet.

ROTATION - $102.45 per season per outlet.

NOTE:

Add 25% to all charges above for existing accounts serving lands outside the District (amount rounded to the nearest dollar.)

SCHEDULE OF RATES AND CHARGES
BY NEVADA IRRIGATION DISTRICT

SCHEDULE 5-D[12]
EFFECTIVE JANUARY 01, 2021

ANNUAL RAW WATER SERVICE, INSIDE DISTRICT

Charges for raw (untreated) water sold for irrigation use on an annual basis and billed monthly.

Miners Inches	**1/4**	**1/2**	**1**	**1 ½**	**2**	**5**
Monthly Rate:	$ 122.83	138.61	152.63	166.65	180.67	422.51

Monthly Rate During a Drought Declaration:							
Drought Stage	**Miners Inches**	**1/4**	**1/2**	**1**	**1 ½**	**2**	**5**
	2	$ 125.78	144.50	161.14	177.78	194.42	481.48
	3	$ 130.05	153.04	173.47	193.91	214.34	566.85
	4	$ 133.37	159.69	183.08	206.47	229.86	633.34

* Per the Nevada Irrigation District Drought Contingency Plan

[12] Rules & Regulations Section 5.01.04

SCHEDULE OF RATES AND CHARGES
BY NEVADA IRRIGATION DISTRICT

SCHEDULE 5-F
EFFECTIVE JANUARY 01, 2021

ANNUAL RAW WATER SERVICE, OUTSIDE DISTRICT SMARTSVILLE ONLY

Charges for raw (untreated) water sold for irrigation use through a metered connection.

Service Size:	**5/8”**	**3/4"**	**1”**	**1 ½”**	**2”**	**3”**	**4”**
Minimum Monthly Rate:	$ 2.51	2.51	2.51	2.51	2.51	2.51	2.51
USAGE RATES:	$2.21 per hundred cubic feet (hcf) per billing period						

NOTE:

Water served pursuant to this schedule is untreated; which, if consumed or used for culinary purposes, could cause serious illness. If the water is so used, it is used at the customer’s own risk.

SCHEDULE OF RATES AND CHARGES
BY NEVADA IRRIGATION DISTRICT

SCHEDULE 5-G[13]
EFFECTIVE JANUARY 01, 2021

INSIDE DISTRICT SEASONAL IRRIGATION WATER

	SUMMER SERVICE	WINTER SERVICE
FIXED SERVICE CHARGE +	$ 570.99	$ 713.73
VOLUMETRIC SERVICE CHARGE, PER MI	336.48	420.61

VOLUMETRIC SERVICE CHARGE, PER MI DURING A DROUGHT DECLARATION:		
DROUGHT STAGE*:	**SUMMER SERVICE**	**WINTER SERVICE**
2	$ 399.38	$ 499.22
3	490.44	613.05
4	561.36	701.70

* Per the Nevada Irrigation District Drought Contingency Plan

- Summer service to begin on or about April 15 through October 14
- Winter service to begin on or about October 15 through April 14
- Winter service will be charged at 1.25 times the summer service rate.

[13] Resolution 2019-06; Rules & Regulations Section 5.01.02, 5.01.03

SCHEDULE OF RATES AND CHARGES
BY NEVADA IRRIGATION DISTRICT

SCHEDULE 5-H[14]
EFFECTIVE JANUARY 01, 2021

OUTSIDE DISTRICT SURPLUS IRRIGATION WATER

	SUMMER SERVICE	WINTER SERVICE
FIXED SERVICE CHARGE +	$ 713.73	$890.74
VOLUMETRIC SERVICE CHARGE, PER MI	420.61	524.91

VOLUMETRIC SERVICE CHARGE, PER MI DURING A DROUGHT DECLARATION:		
DROUGHT STAGE*:	**SUMMER SERVICE**	**WINTER SERVICE**
2	$ 499.22	$ 623.03
3	613.05	765.09
4	701.70	875.72

* Per the Nevada Irrigation District Drought Contingency Plan

- Summer service to begin on or about April 15 through October 14
- Winter service to begin on or about October 15 through April 14
- Winter service will be charged at 1.56 times the inside district summer service rate.

[14] Resolution 2019-06; Rules & Regulations Section 5.01.11

SCHEDULE OF RATES AND CHARGES
BY NEVADA IRRIGATION DISTRICT

SCHEDULE 5-I[15]
EFFECTIVE JANUARY 01, 2021

DEMAND WATER

When available, Demand Irrigation Water may be purchased at rates equal to the following factors, times the normal Irrigation Water rate:

DEMAND (In Days)	10	20	30	40	50	60	70	80	90	100
RATE FACTOR	.20	.35	.50	.65	.75	.80	.85	.90	.95	1.00

Minimum Charge: $317.60 (.35 x 1 M.I. summer seasonal irrigation water rate)

During a drought declaration: When available, Demand Irrigation Water may be purchased at rates equal to the above factors, times the drought stage Irrigation Water rate.

DROUGHT STAGE*:	MINIMUM CHARGE
2	$ 339.60
3	371.50
4	396.30

* Per the Nevada Irrigation District Drought Contingency Plan

Duration must be established upon application. All charges for demand service will be collected in advance of the start of delivery.

NOTE:

Add 25% to all charges above for existing accounts serving lands outside the District (amount rounded to the nearest dollar.)

[15] Rules & Regulations Section 5.01.07

SCHEDULE OF RATES AND CHARGES
BY NEVADA IRRIGATION DISTRICT

SCHEDULE 5-J[16]
EFFECTIVE JANUARY 01, 2021

FALL/STOCK WATER

AVAILABILITY: October 15 to December 1 to regular irrigation water customers in quantities up to the amount of the seasonal purchase

RATE: $2.15 Per M.I. day (10 M.I. seasonal rate divided by 1830 M.I.D.)

MINIMUM CHARGE: $317.60 (.35 X 1 M.I. Summer Seasonal Irrigation Water Rate)

During a drought declaration:

DROUGHT STAGE*:	MINIMUM CHARGE	RATE PER MI, PER DAY
2	$ 339.60	$ 2.49
3	371.50	2.99
4	396.30	3.38

* Per the Nevada Irrigation District Drought Contingency Plan

All charges for fall/stock water service will be collected in advance of delivery.

NOTE:

Add 25% to all charges above for existing accounts serving lands outside the District (amount rounded to the nearest dollar.)

[16] Rules & Regulations Section 5.01.06

SCHEDULE OF RATES AND CHARGES
BY NEVADA IRRIGATION DISTRICT

SCHEDULE 5-K[17]
EFFECTIVE JANUARY 01, 2021

RAW INTERMITTENT FLOW IRRIGATION WATER

SEASON: April 15 to October 14

RATE per acre foot season: $29.68

MINIMUM SALE: $ 198.86

During a drought declaration:

DROUGHT STAGE*:	MINIMUM SALE	RATE PER AF SEASON
2	$ 236.04	$ 35.23
3	289.84	43.26
4	331.72	49.51

* Per the Nevada Irrigation District Drought Contingency Plan

Definition: Water belonging to District which cannot be supplemented by an auxiliary supply and in District's opinion cannot be considered a firm supply.

Determining Water Use: Sales of return intermittent flow irrigation water utilized by property owners shall be established in acre feet by District through pump ratings, sprinkler flow, actual diversions, acreage irrigated or any combination of the above methods as may be deemed appropriate to determine the amount of water to be used.

NOTE:

Add 25% to all charges above for existing accounts serving lands outside the District (amount rounded to the nearest dollar.)

[17] Rules & Regulations Section 5.01.05

SCHEDULE OF RATES AND CHARGES
BY NEVADA IRRIGATION DISTRICT

SCHEDULE 5-L
EFFECTIVE JANUARY 01, 2020

ENERGY PUMPING COST – MAGNOLIA #3

Energy Pumping Cost for irrigation (raw) water served from Magnolia #3 Pump System

Cost per M.I. per season: $348.75

Monthly cost for customers on continuous service:

Miners Inches	**1/4**	**1/2**	**1**	**1 ½**	**2**
Monthly Rate:	$ 14.53	29.06	43.59	58.12	72.66

Charge will be adjusted, after the end of irrigation season, based on actual water pumped by the District and current year pumping costs.

SCHEDULE OF RATES AND CHARGES
BY NEVADA IRRIGATION DISTRICT

SCHEDULE 5-M
EFFECTIVE JANUARY 01, 2020

ENERGY PUMPING COST – EDGEWOOD

Energy Pumping Cost for irrigation (raw) water served from Edgewood Pumped System

Cost per M.I. per season: $78.42

Monthly cost for customers on continuous service:

Miners Inches	**1/4**	**1/2**	**1**	**1 ½**	**2**
Monthly Rate:	$ 3.27	6.54	9.80	13.07	16.34

SCHEDULE OF RATES AND CHARGES
BY NEVADA IRRIGATION DISTRICT

SCHEDULE 5-R
EFFECTIVE JANUARY 01, 2021

MUNICIPAL WATER RATES

INSIDE DISTRICT

Treated Water:

4" Meter, Monthly Fixed Service Charge				$733.36
4" Double Check Valve, Monthly Service Charge				$28.50
Plus Volumetric Service Charge by Drought Stage:				
	1	**2**	**3**	**4**
Per Acre Foot	$681.71	$842.89	$1,045.44	$1,387.39
Per Hundred Cubic Foot (HCF)	1.57	1.94	2.40	3.19

Raw Water:

Fixed Service Charge				$540.09
Plus Volumetric Service Charge by Drought Stage:				
	1	**2**	**3**	**4**
Per Acre Foot	$280.73	$334.84	$411.88	$468.35

OUTSIDE DISTRICT

Treated Water:

Volumetric Service Charge by Drought Stage:				
	1	**2**	**3**	**4**
Per Acre Foot	$851.60	$1,054.15	$1,306.80	$1,733.69
Per Hundred Cubic Foot (HCF)	1.96	2.42	3.00	3.98

6" Meter, Monthly Fixed Service Charge				**$1,833.40**
6" Double Check Valve, Monthly Service Charge				**$56.00**
Plus Volumetric Service Charge by Drought Stage:				
	1	**2**	**3**	**4**
Per Acre Foot	$851.60	$1,054.15	$1,306.80	$1,733.69
Per Hundred Cubic Foot (HCF)	1.96	2.42	3.00	3.98

Raw Water

Fixed Service Charge				**$675.12**
Plus Volumetric Service Charge by Drought Stage				
	1	**2**	**3**	**4**
Per Acre Foot	$350.92	$418.56	$514.85	$585.43

SCHEDULE OF RATES AND CHARGES — SCHEDULE 6-A
BY NEVADA IRRIGATION DISTRICT — EFFECTIVE See below

MISCELLANEOUS CHARGES
RENDERING AND PAYMENT OF BILLS

DESCRIPTION	CHARGE	EFFECTIVE DATE
Duplicate of Water Statement (per billing)	$ 2.00	09/26/1984
Turn off Notification Fee (Inside District)	10.00	09/26/1984
Turn off Notification Fee (Outside District)	12.50	09/26/1984
Outside District Security Deposit	50.00	09/26/1984
Return Check Fee	25.00	02/11/2015
Public Utility Easement Abandonment	50.00	01/01/1993
Water Availability Letter	50.00	01/01/1994
Variance Request	175.00	01/01/1994
Photocopies, per page	0.10	02/11/2015
Records on Compact Disc (plus postage if applicable)	5.00	02/11/2015
Encroachment Permit - County	190.00	07/01/2007

SCHEDULE OF RATES AND CHARGES — SCHEDULE 7-A
BY NEVADA IRRIGATION DISTRICT — EFFECTIVE FEBRUARY 11, 2015

SPECIAL SERVICE CALL

Special Service Call fee inside District:	$ 65.00
Special Service Call fee after normal working hours:	150.00
Special Service Call fee outside District:	81.00
Special Service Call fee after normal working hours, outside District	188.00

SCHEDULE OF RATES AND CHARGES — SCHEDULE 8-A[18]
BY NEVADA IRRIGATION DISTRICT — EFFECTIVE JANUARY 1, 2021

PUBLIC FIRE HYDRANTS ON TREATED WATER SYSTEMS

HYDRANT INSTALLATION	
Concurrently with New Construction	$7,101.00
Installed on Existing Main	9,777.00
Plus lateral charge for each foot in excess of 10 feet	58.80
HYDRANT REMOVAL AND DISCONTINUANCE OF SERVICE	1,566.00
SALVAGE CREDIT ON FIRE HYDRANT RELOCATION	466.00

- Any condition, which in the opinion of the District will result in an estimated installation cost of more than twenty-five percent above those charges shown in this schedule, will be installed on an actual cost basis. Example conditions include connections to a water main larger than 8 inch, connection to a main located deeper than 5 feet below surface, installation in concrete, pavement, or rock.

- The District will add to the basic hydrant installation fee any estimated costs related to encroachment permits including associated inspection charges as well as those costs related to any required right of ways.

NOTE

Add 25% to all charges above for accounts serving lands outside the District (amount rounded to the nearest dollar.)

[18] Rules & Regulations Section 8.04

SCHEDULE OF RATES AND CHARGES — SCHEDULE 8-B[19]
BY NEVADA IRRIGATION DISTRICT — EFFECTIVE JANUARY 1, 2021

PRIVATE FIRE SERVICE – INSTALLATION CHARGES

The District will estimate all installation costs not associated with the vault and add this amount to the vault costs indicated below. The final cost to the applicant will be the summation of these two installation costs.

Vault installation includes all piping and appurtenances located within the vault, as well as the meter box.

Any condition, which, in the opinion of the District, will result in an estimated vault installation cost of more than twenty-five percent above those charges shown in this schedule, will be installed on an estimated cost basis.

Installations requiring a road boring and jacking will be completed on a time and material basis. A deposit, based on the District's anticipated maximum cost will be due from the applicant prior to installation. The final cost to the applicant will not exceed the deposit.

SIZE	DETECTOR CHECK	DOUBLE DETECTOR CHECK
2"	N/A	N/A
3"	N/A	$ 14,134.00
4"	$ 12,582.00	15,490.00
6"	12,992.00	16,969.00
8"	14,320.00	22,941.00
10"	N/A	27,262.00

A detector check is installed unless backflow protection is required, as discussed in Section 9 of the Regulations. A double detector check is installed where backflow protection is needed.

The District will add to the basic vault installation fee any estimated costs related to encroachment permits including associated inspection charges as well as those related to any required right of ways.

NOTE:

A $100.00 fee will be collected at the time an application for a private fire service is submitted to the District. This fee will compensate the District for time spent in estimating the installation cost. The fee will be waived if applicant, pursuant to section 8.05.02 of these Regulations, utilizes a private contractor to install the service and does not request an estimate.

Add 25% to all charges above for accounts serving lands outside the District.

[19] Rules & Regulations Section 8.05

SCHEDULE OF RATES AND CHARGES
BY NEVADA IRRIGATION DISTRICT

SCHEDULE 8-C[20]
EFFECTIVE JANUARY 01, 2021

PRIVATE FIRE SERVICE - MONTHLY CHARGES

SIZE	INSIDE DISTRICT DETECTOR CHECK[1]	OUTSIDE DISTRICT DETECTOR CHECK[2]
1”	$ 3.50	$ 4.40
2”	N/A	N/A
3”	N/A	N/A
4”	20.00	25.00
6”	21.30	26.60
8”	23.60	29.50

[1] Usage is charged at double the prevailing 4EI rate schedule.

[2] Usage is charged at double the prevailing 4EO rate schedule.

SCHEDULE OF RATE AND CHARGES
BY NEVADA IRRIGATION DISTRICT

SCHEDULE 8-D
EFFECTIVE JANUARY 01, 2021

PRIVATE FIRE SERVICE - MONTHLY CHARGES

SIZE	INSIDE DISTRICT DOUBLE DETECTOR CHECK[1]	OUTSIDE DISTRICT DOUBLE DETECTOR CHECK[2]
2”	$ 23.50	$ 29.40
3”	25.20	31.50
4”	25.80	32.30
6”	30.00	37.50
8”	45.90	57.40
10”	59.60	74.50

[1] Usage is charged at double the prevailing 4EI rate schedule.

[2] Usage is charged at double the prevailing 4EO rate schedule.

[20] Rules and Regulations Section 8.05.04

SCHEDULE OF RATES AND CHARGES
BY NEVADA IRRIGATION DISTRICT

SCHEDULE 9-B[21]
EFFECTIVE JANUARY 01, 2021

BACKFLOW PREVENTION DEVICE - INSTALLATION CHARGES

ASSEMBLY SIZE	DCV [1]	RP [2]
¾"	$ 732.00	$ 1,248.00
1"	739.00	1,395.00
1 ½"	1,178.00	2,279.00
2"	1,220.00	2,917.00
3"	4,457.00	9,682.00
4"	12,514.00	12,315.00
6"	16,334.00	16,882.00
8"	23,589.00	21,325.00
10" AND UP	Actual Cost	Actual Cost

[1] Double Check Valve Assembly
[2] Reduced Pressure Principle Device

NOTE

Charges covering double detector checks which are utilized on high risk private fire services can be found in Schedule 8-B.

Add 25% to all charges above for accounts serving lands outside the District (amount rounded to the nearest dollar.)

[21] Rules & Regulations Section 9

SCHEDULE OF RATES AND CHARGES
BY NEVADA IRRIGATION DISTRICT

SCHEDULE 9-C[22]
EFFECTIVE JANUARY 01, 2021

BACKFLOW PREVENTION DEVICE – MONTHLY CHARGE

ASSEMBLY SIZE	INSIDE DISTRICT DCV*	OUTSIDE DISTRICT DCV*
¾"	$7.60	$ 9.50
1"	7.80	9.80
1 ½"	8.40	10.50
2"	8.70	10.90
3"	24.40	30.50
4"	28.50	35.60
6"	44.80	56.00
8"	57.90	72.40

* Double check valve assembly

SCHEDULE OF RATES AND CHARGES
BY NEVADA IRRIGATION DISTRICT

SCHEDULE 9-D
EFFECTIVE JANUARY 01, 2021

BACKFLOW PREVENTION DEVICE - MONTHLY CHARGE

ASSEMBLY SIZE	INSIDE DISTRICT RP*	OUTSIDE DISTRICT RP*
¾"	$ 8.70	$ 10.90
1"	9.80	12.30
1 ½"	13.10	16.40
2"	13.20	16.50
3"	27.80	34.80
4"	31.10	38.90
6"	42.40	53.00
8"	65.20	81.50

*Reduced pressure principle device

[22] Rules & Regulations Section 9.04

SCHEDULE OF RATES AND CHARGES SCHEDULE 10-A[23]
BY NEVADA IRRIGATION DISTRICT EFFECTIVE JANUARY 1, 2021

DISTRICT CONSTRUCTED MAINLINE EXTENSIONS

The District will estimate all costs not included in the basic charge listed below and add this to the basic charge. The final cost to the applicant will be the summation of these two installation costs, however, unexpected costs associated with required right of ways or encroachment permits will be added to the total.

BASIC CHARGE

SIZE	COST/FOOT	ADD ON FOR SHORT LENGTHS
6”	$ 110.90	$ 31.00
8”	141.90	31.00
10”	177.40	31.00
12”	213.10	31.00

- Any condition, which, in the opinion of the District, will result in estimated costs of more than twenty-five percent of those charges shown in this Schedule, will be installed on an estimated cost basis. Pipe sizes in excess of twelve inches will be accomplished on an estimated cost basis.
- The basic charge includes all necessary pipe, air and vacuum valves, blow-offs, thrust block and engineering work. Not included in the basic charge are mainline valves, service settings, existing pipe tie-in, fire hydrant assemblies, right of way and all other items not specifically mentioned as covered under the basic charge.
- If total length of installation is less than 100 feet, add indicated amounts on to per-foot costs; however, the cost as so determined will not exceed the cost of a 100-foot extension.
- The District will determine, prior to start of construction, if adequate funds have been provided in the estimated cost to cover right of way purchases, associated legal and court fees, as well as to cover requirements mandated in any encroachment permits the District must obtain from other public entities for the mainline extension. The developer will be required to pay any of these additional costs prior to start of construction.

[23] Rules & Regulations Section 10.04

SCHEDULE OF RATES AND CHARGES SCHEDULE 10-B[24]
BY NEVADA IRRIGATION DISTRICT EFFECTIVE JANUARY 1, 2021

TREATED WATER DISTRIBUTION MAIN CHARGES FOR CALCULATING TEMPORARY SERVICE LOCATION TREATED WATER MAIN CONTRIBUTIONS

Multiplier
$124.10

The Treated Water Distribution Main (TWDM) Charge as shown herein will be determined by the District and revised or amended periodically to reflect updated estimates for the cost to provide and install distribution pipelines.

The administrative processing fee for the Temporary Service Location application shall be $175.00.

The processing fee for the renewal of an Approved Temporary Service Location shall be $90.00.

[24] Rules & Regulations Section 10.12

SCHEDULE OF RATES AND CHARGES
BY NEVADA IRRIGATION DISTRICT

SCHEDULE 12-A[25]
EFFECTIVE SEPTEMBER 26, 1984

PENALTIES FOR UNAUTHORIZED TAKING OF WATER

OFFENSE	PENALTY
FIRST	$250.00
SECOND	$500.00

[25] Rules & Regulations Section 12.04

Appendix E: Stormwater Policy #6655

Nevada Irrigation District

POLICY MANUAL

POLICY TITLE: Storm Water
POLICY NUMBER: 6655

Storm water is an ongoing concern for the District because District facilities are not intended to operate as a storm water conveyance system. The District owns and maintains over 450 miles of open canals that cross through and adjacent to numerous watersheds with natural and man-made water conveyance areas. District facilities are vulnerable to storm water intrusion from both natural and manmade conveyance systems.

The District is not a storm water utility and has not accepted the responsibility of planning, regulating, and permitting as required for the management and disposal of storm water.

District canals and the related facilities such as culverts are designed and constructed to accommodate District managed water supplies, plus some limited intrusion flow. These facilities are not designed to accommodate the additional capacity a full watershed contributes during a storm event.

As future development increases and impacts of climate change are realized, the quantity and intensity of storm water will be an ongoing and increasing issue. It is the District's desire that water should, whenever possible, stay within the watershed of origin except where the District exercises its water rights to transport waters. The intent of this policy is to establish a District-wide approach to reduce the impacts of storm water on District facilities as well as parties adjacent to District facilities.

6655.1 The District will proactively pursue modification, mitigation, and remediation within the development planning process, zoning changes, and other service related requests to require the management of storm water generated by projects to ensure that water is not directed, directly or indirectly, into District facilities.

6655.2 The District will work to reduce and/or eliminate the discharge of storm water into existing facilities. The focus will be to divert storm water away from District facilities and allow storm water to remain in its natural channel and parent watershed.

6655.3 The District will attempt to minimize facility interferences on natural watershed systems.

6655.4 The District will, as necessary, intervene in projects that could or can influence District facilities, to request proper collection and disposal of storm water.

6655.5 The District will design culverts, canals, and appurtenant structures to meet design flows for District operations with an additional 25 percent capacity for unanticipated flows, or as modified by the Engineering Manager, but shall not permit the system to be used for the intentional conveyance of storm water.

6655.6 The District will engage and require local and state governments to handle and mitigate impacts to District facilities by storm water.

Adopted: January 28, 2015 via Resolution No. 2015-02
Revised:

Appendix F: Annual Water Quality Report

ANNUAL WATER QUALITY REPORT

REPORTING YEAR 2019

Presented By

Nevada Irrigation District

Este informe contiene información muy importante sobre su agua potable.
Tradúzcalo o hable con alguien que lo entienda bien.

PWS ID#: 2910004, 2910014, 2910023, 2910006, 3110026

Our Mission Continues

We are once again pleased to present our annual water quality report covering all testing performed between January 1 and December 31, 2019. Over the years, we have dedicated ourselves to producing drinking water that meets all state and federal standards. We continually strive to adopt new methods for delivering the best-quality drinking water to you. As new challenges to drinking water safety emerge, we remain vigilant in meeting the goals of source water protection, water conservation, and community education while continuing to serve the needs of all our water users.

Please remember that we are always available should you ever have any questions or concerns about your water.

For additional water quality information, customers may contact NID Treated Water Superintendent Fred Waymire at the district office at (530) 273-6185.

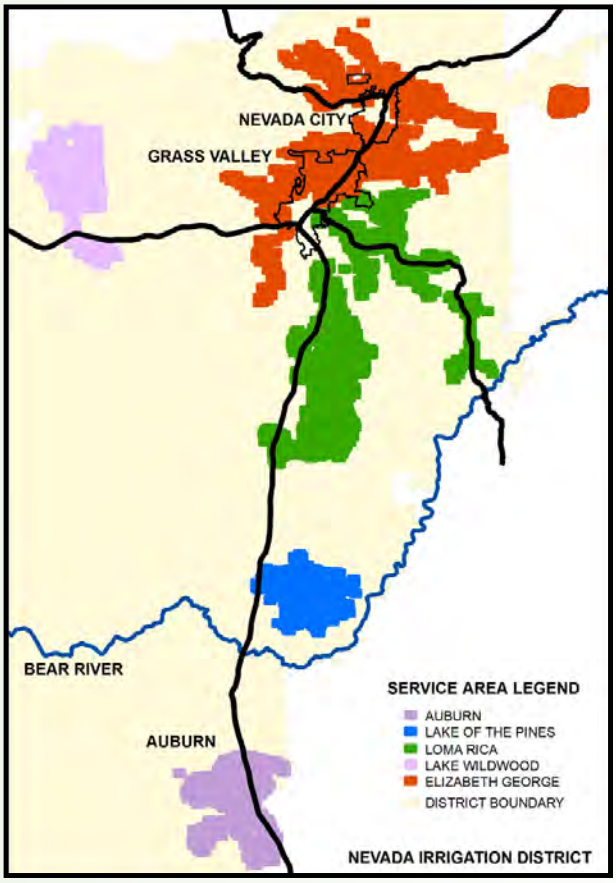
NID Pledges Water Quality, Seeks Public Participation

The board of directors encourages public participation on issues concerning our water systems. District policy is set by the elected board of directors. Board meetings are held at 9:00 a.m. on the second and fourth Wednesday of each month at the NID Business Center in Grass Valley. Check NID's website (www.nidwater.com) or call the main office at (530) 273-6185 to confirm meeting times.

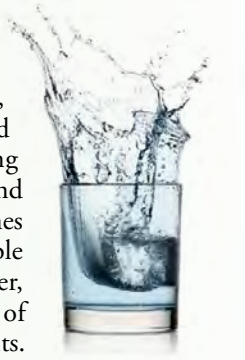
Important Health Information

Some people may be more vulnerable to contaminants in drinking water than the general population. Immunocompromised persons such as persons with cancer undergoing chemotherapy, persons who have undergone organ transplants, people with HIV/AIDS or other immune system disorders, some elderly, and infants may be particularly at risk from infections. These people should seek advice about drinking water from their health care providers. The U.S. EPA/CDC (Centers for Disease Control and Prevention) guidelines on appropriate means to lessen the risk of infection by *cryptosporidium* and other microbial contaminants are available from the Safe Drinking Water Hotline at (800) 426-4791 or http://water.epa.gov/drink/hotline.

Nevada Irrigation District Customers Served



Lead in Home Plumbing



If present, elevated levels of lead can cause serious health problems, especially for pregnant women and young children. Lead in drinking water is primarily from materials and components associated with service lines and home plumbing. We are responsible for providing high-quality drinking water, but we cannot control the variety of materials used in plumbing components. When your water has been sitting for several hours, you can minimize the potential for lead exposure by flushing your tap for 30 seconds to 2 minutes before using water for drinking or cooking. (If you do so, you may wish to collect the flushed water and reuse it for another beneficial purpose, such as watering plants.) If you are concerned about lead in your water, you may wish to have your water tested. Information on lead in drinking water, testing methods, and steps you can take to minimize exposure is available from the Safe Drinking Water Hotline at (800) 426-4791 or at www.epa.gov/safewater/lead.

Substances That Could Be in Water

The sources of drinking water (both tap water and bottled water) include rivers, lakes, streams, ponds, reservoirs, springs, and wells. As water travels over the surface of the land or through the ground, it dissolves naturally occurring minerals and, in some cases, radioactive material and can pick up substances resulting from the presence of animals or from human activity.

In order to ensure that tap water is safe to drink, the U.S. Environmental Protection Agency (U.S. EPA) and the State Water Resources Control Board (State Board) prescribe regulations that limit the amount of certain contaminants in water provided by public water systems. The U.S. Food and Drug Administration regulations and California law also establish limits for contaminants in bottled water that provide the same protection for public health. Drinking water, including bottled water, may reasonably be expected to contain at least small amounts of some contaminants. The presence of contaminants does not necessarily indicate that water poses a health risk.

Contaminants that may be present in source water include:

Microbial Contaminants, such as viruses and bacteria, that may come from sewage treatment plants, septic systems, agricultural livestock operations, and wildlife;

Inorganic Contaminants, such as salts and metals, that can be naturally occurring or can result from urban stormwater runoff, industrial or domestic wastewater discharges, oil and gas production, mining, or farming;

Pesticides and Herbicides that may come from a variety of sources such as agriculture, urban stormwater runoff, and residential uses;

Organic Chemical Contaminants, including synthetic and volatile organic chemicals, which are by-products of industrial processes and petroleum production and which can also come from gas stations, urban stormwater runoff, agricultural applications, and septic systems;

Radioactive Contaminants that can be naturally occurring or can be the result of oil and gas production and mining activities.

More information about contaminants and potential health effects can be obtained by calling the U.S. EPA's Safe Drinking Water Hotline at (800) 426-4791.

Sierra Snowpack Is the Source of Your Water

NID treated and distributed more than 2.8 billion gallons of surface water last year. This water originates in the Sierra Nevada snowpack on five mountain watersheds. These include Middle and South Yuba Rivers, Bear River, North Fork of American River, and Deer Creek. Most of this water is routed through Lake Spaulding and transported to NID's water treatment plants via canal systems operated by NID and the Pacific Gas and Electric Company.

Source Water Assessment

In 2016 and 2017, NID teamed with the Placer County Water Agency and Starr Consulting to update its source water susceptibility assessment. This assessment describes the susceptibility to and types of constituents that may come into contact with your drinking water source. The report confirmed that district watersheds have very low levels of contaminants. To a limited extent, those contaminants found are usually associated with wildlife and human recreational activity. Leading sources of potential contamination include highways, roadways and railroads near rivers and raw water canals, septic tanks, unidentified utility pipelines crossing canals, recreation at upstream reservoirs, historical and active mining operations, and utility operations. This new assessment (Watershed Sanitary Survey 2017 Update) can be found on the NID website (http://nidwater.com/ybrwss-2017-update-final/).

Water Quality Testing

Effective operation and maintenance of the drinking water distribution system assures that quality drinking water travels through the system to your meter. The residual chlorine in the water after treatment prevents regrowth of organisms during storage and transmission in the distribution system. Annual flushing of water mains and rotation of stored supplies also keep water fresh and limit growth of organisms. The district conducts weekly water quality testing in the distribution system to ensure that drinking water continues to meet state and federal requirements.

Test Results

Our water is monitored for many different kinds of substances on a very strict sampling schedule, and the water we deliver must meet specific health standards. Here we only show those substances that were detected in our water. Remember that detecting a substance does not mean the water is unsafe to drink; our goal is to keep all detects below their respective maximum allowed levels.

The state recommends monitoring for certain substances less than once per year because the concentrations of these substances do not change frequently. In these cases, the most recent sample data are included, along with the year in which the sample was taken.

We participated in the fourth stage of the U.S. EPA's Unregulated Contaminant Monitoring Rule (UCMR4) program by performing additional tests on our drinking water. UCMR4 sampling benefits the environment and public health by providing the U.S. EPA with data on the occurrence of contaminants suspected to be in drinking water in order to determine if U.S. EPA needs to introduce new regulatory standards to improve drinking water quality. Unregulated contaminant monitoring data are available to the public, so please feel free to contact us if you are interested in obtaining that information. If you would like more information on the U.S. EPA's Unregulated Contaminant Monitoring Rule, please call the Safe Drinking Water Hotline at (800) 426-4791.

REGULATED SUBSTANCES

				Loma Rica		North Auburn		Elizabeth George		Lake Wildwood		Lake of the Pines			
SUBSTANCE (UNIT OF MEASURE)	YEAR SAMPLED	MCL [MRDL]	PHG (MCLG) [MRDLG]	AMOUNT DETECTED	RANGE LOW-HIGH	AMOUNT DETECTED	RANGE LOW-HIGH	AMOUNT DETECTED	RANGE LOW-HIGH	AMOUNT DETECTED	RANGE LOW-HIGH	AMOUNT DETECTED	RANGE LOW-HIGH	VIOLATION	TYPICAL SOURCE
Chlorine (ppm)	2019	[4.0 (as Cl2)]	[4 (as Cl2)]	0.92	0.62–1.23	0.98	0.59–1.40	0.89	0.68–1.13	0.88	0.62–1.20	1.03	0.31–1.42	No	Drinking water disinfectant added for treatment
Control of DBP precursors [TOC] (ppm)	2019	TT	NA	0.93	0.76–1.20	0.96	0.71–1.20	0.88	0.65–1.20	1.08	0.74–1.80	1.10	0.83–1.50	No	Various natural and man-made sources
Cryptosporidium (Units)	2018	Surface water treatment = TT	HPC = NA; Others = (0)	ND	NA	0.0116[1]	ND–0.279[1]	0.004	ND–0.093	ND[1]	NA[1]	0.0039[1]	ND–0.093[1]	No	Naturally present in the environment
Haloacetic Acids (ppb)	2019	60	NA	19.3	12.0–24.0	23.6	17.0–30.0	18.8	9.1–34.0	24.5	13.0–35.0	24.1	19.0–29.0	No	By-product of drinking water disinfection
TTHMs [Total Trihalomethanes] (ppb)	2019	80	NA	40.2	16.0–61.0	47.1	36.0–61.0	44.9	26.0–60.0	40.5	20.0–68.0	52.1	24.0–67.0	No	By-product of drinking water disinfection
Turbidity[2] (NTU)	2019	TT	NA	0.021 Average	0.01–0.17	0.039 Average	0.01–0.15	0.028 Average	0.02–0.20	0.027 Average	0.02–0.13	0.031 Average	0.01–0.20	No	Soil runoff
Turbidity (Lowest monthly percent of samples meeting limit)	2019	TT = 95% of samples meet the limit	NA	100%	NA	100%	NA	100%	NA	100%	NA	100%	NA	No	Soil runoff

Tap water samples were collected for lead and copper analyses from sample sites throughout the community

				Loma Rica		North Auburn		Elizabeth George		Lake Wildwood		Lake of the Pines			
SUBSTANCE (UNIT OF MEASURE)	YEAR SAMPLED	AL	PHG (MCLG)	AMOUNT DETECTED (90TH %ILE)	SITES ABOVE AL/ TOTAL SITES	AMOUNT DETECTED (90TH %ILE)	SITES ABOVE AL/ TOTAL SITES	AMOUNT DETECTED (90TH %ILE)	SITES ABOVE AL/ TOTAL SITES	AMOUNT DETECTED (90TH %ILE)	SITES ABOVE AL/ TOTAL SITES	AMOUNT DETECTED (90TH %ILE)	SITES ABOVE AL/ TOTAL SITES	VIOLATION	TYPICAL SOURCE
Copper (ppm)	2018	1.3	0.3	ND	0/31	0.077[3]	0/20[3]	ND	0/41	ND[3]	0/20[3]	0.071[3]	0/20[3]	No	Internal corrosion of household plumbing systems; erosion of natural deposits; leaching from wood preservatives
Lead (ppb)	2018	15	0.2	ND	0/31	ND[3]	0/20[3]	ND	0/41	ND[3]	0/20[3]	ND[3]	0/20[3]	No	Internal corrosion of household water plumbing systems; discharges from industrial manufacturers; erosion of natural deposits

SECONDARY SUBSTANCES

SUBSTANCE (UNIT OF MEASURE)	YEAR SAMPLED	SMCL	PHG (MCLG)	Loma Rica AMOUNT DETECTED	Loma Rica RANGE LOW-HIGH	North Auburn AMOUNT DETECTED	North Auburn RANGE LOW-HIGH	Elizabeth George AMOUNT DETECTED	Elizabeth George RANGE LOW-HIGH	Lake Wildwood AMOUNT DETECTED	Lake Wildwood RANGE LOW-HIGH	Lake of the Pines AMOUNT DETECTED	Lake of the Pines RANGE LOW-HIGH	VIOLATION	TYPICAL SOURCE
Aluminum (ppb)	2019	200	NS	ND	NA	50	NA	ND	NA	ND	NA	130	NA	No	Erosion of natural deposits; residual from some surface water treatment processes
Chloride (ppm)	2019	500	NS	1.8	NA	2.5	NA	2.6	NA	3.7	NA	3.5	NA	No	Runoff/leaching from natural deposits; seawater influence
Manganese (ppb)	2019	50	NS	2.5	ND–10	ND	NA	2.17	0.75–4.6	0.76	ND–1.3	16	ND–29	No	Leaching from natural deposits
Specific Conductance (µS/cm)	2019	1,600	NS	62	51–73	77.5	55–100	66.5	56–77	83.5	69–98	89.5	69–110	No	Substances that form ions when in water; seawater influence
Sulfate (ppm)	2019	500	NS	7.1	NA	7.2	NA	7.1	NA	8.7	NA	9.5	NA	No	Runoff/leaching from natural deposits; industrial wastes
Total Dissolved Solids (ppm)	2019	1,000	NS	47	NA	45	NA	44	NA	62	NA	46	NA	No	Runoff/leaching from natural deposits

UNREGULATED AND OTHER SUBSTANCES [4]

SUBSTANCE (UNIT OF MEASURE)	YEAR SAMPLED	Loma Rica AMOUNT DETECTED	Loma Rica RANGE LOW-HIGH	North Auburn AMOUNT DETECTED	North Auburn RANGE LOW-HIGH	Elizabeth George AMOUNT DETECTED	Elizabeth George RANGE LOW-HIGH	Lake Wildwood AMOUNT DETECTED	Lake Wildwood RANGE LOW-HIGH	Lake of the Pines AMOUNT DETECTED	Lake of the Pines RANGE LOW-HIGH
Alkalinity (ppm)	2019	13	NA	14	NA	13	NA	17	NA	15	NA
Calcium (ppm)	2019	3.2	NA	2.7	NA	3.2	NA	4.0	NA	8.0	NA
Hardness, Total [as CaCO3] (ppm)	2019	13	NA	10	NA	9.8	NA	15.0	NA	24	NA
pH (Units)	2019	7.7	NA	8.0	NA	8.1	NA	7.8	NA	7.8	NA
Sodium (ppm)	2019	6.7	NA	7.5	NA	5.5	NA	8.9	NA	4.0	NA

UNREGULATED CONTAMINANT MONITORING RULE - PART 4 (UCMR4) [4]

SUBSTANCE (UNIT OF MEASURE)	YEAR SAMPLED	Elizabeth George AMOUNT DETECTED	Elizabeth George RANGE LOW-HIGH	Lake Wildwood AMOUNT DETECTED	Lake Wildwood RANGE LOW-HIGH
Bromochloroacetic Acid (ppb)	2019	0.43	ND–0.50	0.83	ND–0.98
Bromodichloroacetic Acid (ppb)	2019	ND	NA	0.72	ND–0.94

[1] Sampled in 2019.
[2] Turbidity is a measure of the cloudiness of the water. We monitor it because it is a good indicator of the effectiveness of our filtration system.
[3] Sampled in 2017.
[4] Unregulated contaminant monitoring helps U.S. EPA and the State Water Resources Control Board determine where certain contaminants occur and whether the contaminants need to be regulated.

Definitions

90th %ile: The levels reported for lead and copper represent the 90th percentile of the total number of sites tested. The 90th percentile is equal to or greater than 90 percent of our lead and copper detections.

AL (Regulatory Action Level): The concentration of a contaminant which, if exceeded, triggers treatment or other requirements that a water system must follow.

MCL (Maximum Contaminant Level): The highest level of a contaminant that is allowed in drinking water. Primary MCLs are set as close to the PHGs (or MCLGs) as is economically and technologically feasible. Secondary MCLs (SMCLs) are set to protect the odor, taste, and appearance of drinking water.

MCLG (Maximum Contaminant Level Goal): The level of a contaminant in drinking water below which there is no known or expected risk to health. MCLGs are set by the U.S. EPA.

MRDL (Maximum Residual Disinfectant Level): The highest level of a disinfectant allowed in drinking water. There is convincing evidence that addition of a disinfectant is necessary for control of microbial contaminants.

MRDLG (Maximum Residual Disinfectant Level Goal): The level of a drinking water disinfectant below which there is no known or expected risk to health. MRDLGs do not reflect the benefits of the use of disinfectants to control microbial contaminants.

NA: Not applicable

ND (Not detected): Indicates that the substance was not found by laboratory analysis.

NS: No standard

NTU (Nephelometric Turbidity Units): Measurement of the clarity, or turbidity, of water. Turbidity in excess of 5 NTU is just noticeable to the average person.

PDWS (Primary Drinking Water Standard): MCLs and MRDLs for contaminants that affect health, along with their monitoring and reporting requirements and water treatment requirements.

PHG (Public Health Goal): The level of a contaminant in drinking water below which there is no known or expected risk to health. PHGs are set by the California EPA.

ppb (parts per billion): One part substance per billion parts water (or micrograms per liter).

ppm (parts per million): One part substance per million parts water (or milligrams per liter).

TT (Treatment Technique): A required process intended to reduce the level of a contaminant in drinking water.

µS/cm (microsiemens per centimeter): A unit expressing the amount of electrical conductivity of a solution.

Appendix G: Memorandum Describing Nevada Irrigation District Raw Water Measurement Best Professional Practices

Memorandum

TO: Agricultural Water Management Plan

FROM: Doug Roderick, P.E., Interim Engineering Manager
Nevada Irrigation District
California Professional Engineers License #C62239

DATE: March 2, 2021

SUBJECT: Raw Water Measurement – Best Management Practices

ENGINEERING DEPARTMENT

Nevada Irrigation District (NID) provides raw water to customers by the miner's inch. By California statute, one miner's inch equals 1.5 cubic feet per minute, or 11.22 gallons per minute, or 1/40 cubic foot per second. NID measures its deliveries in miners inches by free flow through an orifice under a head pressure of 6-inches utilizing an effective discharge coefficient of 0.635. NID references University of California Berkley College of Agriculture Bulletin 588, Measuring Water for Irrigation, by J.E. Christiansen. The size of the orifice is based on the amount of water purchased by the customer. All raw water services are measured at the point of delivery to the customer. NID sets the orifice so that it will have 6-inches of head pressure under normal irrigation flows. In some instances NID utilizes checks within a canal to keep a constant head over the orifices. If the 6-inches of head pressure is not possible, adjustments are made in the orifice sizing to accommodate the available head pressure.

NID makes every reasonable effort to set the orifice to the proper head and allow free flow through the orifice, but maintaining the exact head pressure in a canal system like NID operates can be difficult, particularly due to fluctuations in demands as NID operates to reduce spill at the end of canals.

For deliveries greater than 30 miner's inches, the measurements are typically done with either a weir or parshall flume, depending on site conditions, to give the most accurate measurement for the location installed.

All measurement devices are installed and maintained utilizing standard industry practices and recommendations. These devices are checked annually at a

minimum. These types of measuring devices are proven and have been in use for over 100 years.

To the best of my knowledge NID's current methods of measuring customer deliveries, if properly installed and maintained to industry standards and practices, meet the definition under Section §597.2 for "Best professional practices".

Appendix H: Water Budget Calculations

Water Budget Method Eto Irrigation Season

2016 -Eto from Cal Poly Irrigation Center data

Eto (AF) = (acres)x((crop Eto inches(/12 inches/ft))

Typical	Year Type

Crop Type	Column Name for Lookup	Acres Irrigated (2016)	April	May	June	July	Aug	Sep	TOTAL
Cereals -Corn	Corn and Grain Sorghum	22	4	4	11	15	12	2	48
Cereals - Rice	Rice	157	18	82	98	123	112	32	466
Cereals - Wheat	Grain and Grain Hay	2	1	1	0	0	0	0	2
Cereals - Other	Grain and Grain Hay	29	12	9	1	0	1	0	22
Forage - Alfalfa Hay	Alfalfa Hay and Clover	116	39	57	61	67	60	47	329
Forage - Hay Other	Pasture and Misc. Grasses	824	269	443	430	525	482	362	2,511
Forage - Irrigated Pasture	Pasture and Misc. Grasses	18,867	6,147	10,141	9,842	12,012	11,037	8,286	57,465
Forage - Silage	Pasture and Misc. Grasses	9	3	5	4	5	5	4	26
Forage - Other	Pasture and Misc. Grasses	59	19	32	31	38	35	26	180
Fruits - Apple	Apple, Pear, Cherry, Plum and Prune	224	33	60	101	135	125	92	547
Fruits - Berries - All	Apple, Pear, Cherry, Plum and Prune	110	16	30	50	67	62	46	270
Fruits - Cherries	Apple, Pear, Cherry, Plum and Prune	58	8	16	26	35	33	24	142
Fruits - Citrus - All	Apple, Pear, Cherry, Plum and Prune	151	22	41	69	92	85	63	370
Fruits - Grapes - Table	Grape Vines with 80% canopy	56	9	17	23	26	24	12	112
Fruits - Grapes - Other	Grape Vines with 80% canopy	627	98	193	259	291	273	134	1,248
Fruits - Kiwi	Misc. Deciduous	23	3	4	9	14	13	10	52
Fruits - Peaches	Misc. Deciduous	100	13	17	36	59	56	41	222
Fruits - Pears	Apple, Pear, Cherry, Plum and Prune	121	18	32	55	73	68	50	295
Fruits - Plums	Apple, Pear, Cherry, Plum and Prune	140	20	38	64	85	79	58	343
Fruits - Other	Misc. Deciduous	112	14	19	41	65	63	46	248
Fruits - Persimmons	Misc. Deciduous	3	0	1	1	2	2	1	7
Fruits - Apricots	Apple, Pear, Cherry, Plum and Prune	1	0	0	0	0	0	0	2
Nursery	Flowers, Nursery and Christmas Tree	383	49	64	139	224	215	158	850
Cannabis	Cannabis	na	--	--	--	--	--	--	0
Nuts	Walnuts	171	26	40	72	116	108	78	440
Nuts - Walnuts	Walnuts	15	2	4	6	10	10	7	39
Nuts - Chestnuts	Walnuts	15	2	4	6	10	10	7	39
Nuts - Pistachios	Pistachio	1	0	0	0	1	1	1	3
Nuts - Almonds	Almonds	13	2	3	5	8	7	5	31
Other	Grass Reference ETo	754	301	438	423	519	477	364	2,523
Golf Course	Grass Reference ETo	984	394	573	553	678	623	475	3,295
Other - Parks	Grass Reference ETo	152	61	89	85	105	96	73	510
Other - Exempt	Grass Reference ETo	0	0	0	0	0	0	0	0
Family Garden, Orchard, YD.	Grass Reference ETo	6,026	2,411	3,505	3,385	4,153	3,812	2,908	20,173
No Report .5M / A	Grass Reference ETo	304	122	177	171	209	192	147	1,017
Pond	Grass Reference ETo	11	3	5	5	6	5	4	28
								Total	93,856.73

Water Budget Method Eto Irrigation Season

2017 -Eto from Cal Poly Irrigation Center data

Eto (AF) = (acres)x((crop Eto inches(/12 inches/ft))

Wet	Year Type

Crop Type	Column Name for Lookup	Acres Irrigated (2017)	April	May	June	July	Aug	Sep	TOTAL
Cereals -Corn	Corn and Grain Sorghum	32	7	9	15	22	19	3	75
Cereals - Rice	Rice	157	18	82	98	123	112	32	466
Cereals - Wheat	Grain and Grain Hay	2	1	1	0	0	0	0	2
Cereals - Other	Grain and Grain Hay	29	10	8	3	0	0	1	23
Forage - Alfalfa Hay	Alfalfa Hay and Clover	134	48	48	69	77	76	47	365
Forage - Hay Other	Pasture and Misc. Grasses	808	248	274	385	510	511	307	2,234
Forage - Irrigated Pasture	Pasture and Misc. Grasses	19,309	5,921	6,549	9,188	12,181	12,213	7,337	53,389
Forage - Silage	Pasture and Misc. Grasses	9	3	3	4	5	5	3	24
Forage - Other	Pasture and Misc. Grasses	189	58	64	90	119	119	72	522
Fruits - Apple	Apple, Pear, Cherry, Plum and Prune	228	48	68	102	138	136	85	577
Fruits - Berries - All	Apple, Pear, Cherry, Plum and Prune	125	26	37	56	75	74	47	316
Fruits - Cherries	Apple, Pear, Cherry, Plum and Prune	58	12	17	26	35	35	22	147
Fruits - Citrus - All	Apple, Pear, Cherry, Plum and Prune	171	36	51	77	103	102	64	433
Fruits - Grapes - Table	Grape Vines with 80% canopy	54	12	17	22	26	22	13	112
Fruits - Grapes - Other	Grape Vines with 80% canopy	631	142	195	258	302	264	155	1,316
Fruits - Kiwi	Misc. Deciduous	24	5	6	9	14	14	9	57
Fruits - Peaches	Misc. Deciduous	103	21	28	40	61	60	39	248
Fruits - Pears	Apple, Pear, Cherry, Plum and Prune	139	29	42	62	84	83	52	352
Fruits - Plums	Apple, Pear, Cherry, Plum and Prune	142	30	43	64	86	85	53	360
Fruits - Other	Misc. Deciduous	114	23	31	44	67	66	43	273
Fruits - Persimmons	Misc. Deciduous	3	1	1	1	2	2	1	7
Fruits - Apricots	Apple, Pear, Cherry, Plum and Prune	1	0	0	0	0	0	0	2
Nursery	Flowers, Nursery and Christmas Tree	371	74	100	145	219	215	140	891
Cannabis	Cannabis	13	3	3	5	8	7	5	31
Nuts	Walnuts	193	41	56	86	125	130	78	516
Nuts - Walnuts	Walnuts	15	3	4	7	10	10	6	40
Nuts - Chestnuts	Walnuts	15	3	4	7	10	10	6	40
Nuts - Pistachios	Pistachio	1	0	0	1	1	1	1	3
Nuts - Almonds	Almonds	13	3	4	6	8	8	5	32
Other	Grass Reference ETo	743	238	243	362	510	511	301	2,165
Golf Course	Grass Reference ETo	984	315	322	480	676	677	399	2,868
Other - Parks	Grass Reference ETo	152	49	50	74	105	105	62	443
Other - Exempt	Grass Reference ETo	0	0	0	0	0	0	0	0
Family Garden, Orchard, YD.	Grass Reference ETo	6,146	1,967	2,008	2,996	4,221	4,226	2,489	17,907
No Report .5M / A	Grass Reference ETo	361	116	118	176	248	248	146	1,053
Pond	Grass Reference ETo	11	3	3	4	6	6	3	24
								Total	87,314

Water Budget Method Eto Irrigation Season

2018 -Eto from Cal Poly Irrigation Center data

Eto (AF) = (acres)x((crop Eto inches(/12 inches/ft))

Typical	Year Type

Crop Type	Column Name for Lookup	Acres Irrigated (2018)	April	May	June	July	Aug	Sep	TOTAL
Cereals -Corn	Corn and Grain Sorghum	32	5	7	17	22	18	2	72
Cereals - Rice	Rice	154	17	81	97	121	110	31	458
Cereals - Wheat	Grain and Grain Hay	2	1	1	0	0	0	0	2
Cereals - Other	Grain and Grain Hay	29	12	9	1	0	1	0	22
Forage - Alfalfa Hay	Alfalfa Hay and Clover	134	45	66	70	77	69	54	380
Forage - Hay Other	Pasture and Misc. Grasses	802	261	431	418	510	469	352	2,441
Forage - Irrigated Pasture	Pasture and Misc. Grasses	19,419	6,327	10,438	10,130	12,364	11,360	8,528	59,147
Forage - Silage	Pasture and Misc. Grasses	9	3	5	4	5	5	4	26
Forage - Other	Pasture and Misc. Grasses	190	62	102	99	121	111	84	579
Fruits - Apple	Apple, Pear, Cherry, Plum and Prune	229	33	62	104	138	128	94	559
Fruits - Berries - All	Apple, Pear, Cherry, Plum and Prune	126	18	34	57	76	70	52	307
Fruits - Cherries	Apple, Pear, Cherry, Plum and Prune	55	8	15	25	33	31	23	135
Fruits - Citrus - All	Apple, Pear, Cherry, Plum and Prune	161	24	43	73	98	91	67	395
Fruits - Grapes - Table	Grape Vines with 80% canopy	50	8	15	21	23	22	11	100
Fruits - Grapes - Other	Grape Vines with 80% canopy	642	100	198	265	298	279	138	1,278
Fruits - Kiwi	Misc. Deciduous	24	3	4	9	14	13	10	53
Fruits - Peaches	Misc. Deciduous	105	13	18	38	61	59	43	232
Fruits - Pears	Apple, Pear, Cherry, Plum and Prune	131	19	35	60	79	74	54	321
Fruits - Plums	Apple, Pear, Cherry, Plum and Prune	144	21	39	65	87	81	60	352
Fruits - Other	Misc. Deciduous	229	29	39	83	134	129	95	509
Fruits - Persimmons	Misc. Deciduous	2	0	0	1	1	1	1	4
Fruits - Apricots	Apple, Pear, Cherry, Plum and Prune	1	0	0	0	0	0	0	2
Nursery	Flowers, Nursery and Christmas Tree	378	48	64	137	222	213	157	840
Cannabis	Cannabis	13	2	2	5	8	7	5	29
Nuts	Walnuts	194	30	46	82	131	123	88	499
Nuts - Walnuts	Walnuts	14	2	3	6	9	9	6	36
Nuts - Chestnuts	Walnuts	12	2	3	5	8	8	5	31
Nuts - Pistachios	Pistachio	1	0	0	0	1	1	1	3
Nuts - Almonds	Almonds	13	2	3	5	7	7	5	31
Other	Grass Reference ETo	722	289	420	406	498	457	348	2,417
Golf Course	Grass Reference ETo	984	394	572	553	678	622	475	3,294
Other - Parks	Grass Reference ETo	221	88	129	124	152	140	107	740
Other - Exempt	Grass Reference ETo	0	0	0	0	0	0	0	0
Family Garden, Orchard, YD.	Grass Reference ETo	6,174	2,470	3,591	3,468	4,255	3,905	2,979	20,667
No Report .5M / A	Grass Reference ETo	444	178	258	249	306	281	214	1,487
Pond	Grass Reference ETo	11	3	5	5	6	5	4	27
								Total	97,479

Water Budget Method Eto Irrigation Season

2019 -Eto from Cal Poly Irrigation Center data

Eto (AF) = (acres)x((crop Eto inches(/12 inches/ft))

Wet	Year Type

Crop Type	Column Name for Lookup	Acres Irrigated (2019)	April	May	June	July	Aug	Sep	TOTAL
Cereals -Corn	Corn and Grain Sorghum	33	7	9	16	23	20	3	77
Cereals - Rice	Rice	96	11	51	61	76	69	20	286
Cereals - Wheat	Grain and Grain Hay	2	1	1	0	0	0	0	2
Cereals - Other	Grain and Grain Hay	29	10	8	3	0	0	1	23
Forage - Alfalfa Hay	Alfalfa Hay and Clover	155	55	56	80	89	87	54	422
Forage - Hay Other	Pasture and Misc. Grasses	853	261	289	406	538	539	324	2,357
Forage - Irrigated Pasture	Pasture and Misc. Grasses	19,702	6,042	6,682	9,375	12,428	12,461	7,487	54,475
Forage - Silage	Pasture and Misc. Grasses	9	3	3	4	5	5	3	24
Forage - Other	Pasture and Misc. Grasses	190	58	64	90	120	120	72	525
Fruits - Apple	Apple, Pear, Cherry, Plum and Prune	239	50	72	107	144	142	89	604
Fruits - Berries - All	Apple, Pear, Cherry, Plum and Prune	138	29	41	62	83	82	52	349
Fruits - Cherries	Apple, Pear, Cherry, Plum and Prune	56	12	17	25	33	33	21	140
Fruits - Citrus - All	Apple, Pear, Cherry, Plum and Prune	166	35	50	74	100	99	62	420
Fruits - Grapes - Table	Grape Vines with 80% canopy	52	12	16	21	25	22	13	108
Fruits - Grapes - Other	Grape Vines with 80% canopy	669	150	207	274	320	280	164	1,394
Fruits - Kiwi	Misc. Deciduous	21	4	6	8	12	12	8	50
Fruits - Peaches	Misc. Deciduous	112	22	30	44	66	65	42	269
Fruits - Pears	Apple, Pear, Cherry, Plum and Prune	128	27	38	57	77	76	48	323
Fruits - Plums	Apple, Pear, Cherry, Plum and Prune	148	31	44	66	89	88	55	373
Fruits - Other	Misc. Deciduous	208	41	56	81	122	120	78	499
Fruits - Persimmons	Misc. Deciduous	2	0	1	1	1	1	1	5
Fruits - Apricots	Apple, Pear, Cherry, Plum and Prune	1	0	0	0	0	0	0	2
Nursery	Flowers, Nursery and Christmas Tree	376	75	101	147	222	218	142	905
Cannabis	Cannabis	14	3	4	5	8	8	5	34
Nuts	Walnuts	196	41	57	87	127	132	79	524
Nuts - Walnuts	Walnuts	12	3	3	5	8	8	5	32
Nuts - Chestnuts	Walnuts	12	3	3	5	8	8	5	32
Nuts - Pistachios	Pistachio	1	0	0	1	1	1	1	3
Nuts - Almonds	Almonds	13	3	4	5	8	7	4	31
Other	Grass Reference ETo	729	233	238	355	500	501	295	2,123
Golf Course	Grass Reference ETo	986	315	322	481	677	678	399	2,872
Other - Parks	Grass Reference ETo	224	72	73	109	154	154	91	652
Other - Exempt	Grass Reference ETo	0	0	0	0	0	0	0	0
Family Garden, Orchard, YD.	Grass Reference ETo	6,244	1,998	2,040	3,044	4,288	4,293	2,529	18,191
No Report .5M / A	Grass Reference ETo	398	127	130	194	273	274	161	1,159
Pond	Grass Reference ETo	11	3	3	4	6	6	3	23
								Total	89,310

Water Budget Method Eto Irrigation Season

2020 -Eto from Cal Poly Irrigation Center data

Eto (AF) = (acres)x((crop Eto inches(/12 inches/ft))

Dry	Year Type

Crop Type	Column Name for Lookup	Acres Irrigated (2020)	April	May	June	July	Aug	Sep	TOTAL
Cereals -Corn	Corn and Grain Sorghum	34	5	9	20	25	18	2	79
Cereals - Rice	Rice	97	11	51	61	76	69	20	288
Cereals - Wheat	Grain and Grain Hay	2	1	1	0	0	0	0	2
Cereals - Other	Grain and Grain Hay	30	12	8	1	0	0	0	21
Forage - Alfalfa Hay	Alfalfa Hay and Clover	155	64	79	87	96	83	64	474
Forage - Hay Other	Pasture and Misc. Grasses	826	286	443	490	571	459	373	2,622
Forage - Irrigated Pasture	Pasture and Misc. Grasses	19,727	6,839	10,571	11,688	13,628	10,965	8,894	62,585
Forage - Silage	Pasture and Misc. Grasses	19	6	10	11	13	10	8	59
Forage - Other	Pasture and Misc. Grasses	192	66	103	114	132	107	86	608
Fruits - Apple	Apple, Pear, Cherry, Plum and Prune	248	45	74	126	164	129	103	643
Fruits - Berries - All	Apple, Pear, Cherry, Plum and Prune	136	25	41	69	90	71	57	353
Fruits - Cherries	Apple, Pear, Cherry, Plum and Prune	54	10	16	27	36	28	23	140
Fruits - Citrus - All	Apple, Pear, Cherry, Plum and Prune	182	33	54	92	121	95	76	471
Fruits - Grapes - Table	Grape Vines with 80% canopy	54	11	19	25	27	21	12	115
Fruits - Grapes - Other	Grape Vines with 80% canopy	661	130	229	303	333	258	151	1,405
Fruits - Kiwi	Misc. Deciduous	21	3	4	9	13	11	9	50
Fruits - Peaches	Misc. Deciduous	118	20	24	48	76	61	51	279
Fruits - Pears	Apple, Pear, Cherry, Plum and Prune	134	24	40	68	89	70	56	347
Fruits - Plums	Apple, Pear, Cherry, Plum and Prune	160	29	48	81	106	83	67	413
Fruits - Other	Misc. Deciduous	218	36	44	89	140	114	93	515
Fruits - Persimmons	Misc. Deciduous	2	0	0	1	1	1	1	5
Fruits - Apricots	Apple, Pear, Cherry, Plum and Prune	1	0	0	0	0	0	0	2
Nursery	Flowers, Nursery and Christmas Tree	348	58	70	142	223	181	149	823
Cannabis	Cannabis	12	2	2	5	8	6	5	28
Nuts	Walnuts	203	38	55	93	150	122	96	554
Nuts - Walnuts	Walnuts	8	1	2	4	6	5	4	22
Nuts - Chestnuts	Walnuts	12	2	3	6	9	7	6	33
Nuts - Pistachios	Pistachio	1	0	0	1	1	1	1	3
Nuts - Almonds	Almonds	13	2	3	6	8	7	5	32
Other	Grass Reference ETo	731	286	415	465	548	437	363	2,514
Golf Course	Grass Reference ETo	986	386	559	628	739	589	490	3,391
Other - Parks	Grass Reference ETo	224	88	127	142	168	134	111	770
Other - Exempt	Grass Reference ETo	0	0	0	0	0	0	0	0
Family Garden, Orchard, YD.	Grass Reference ETo	6,409	2,510	3,637	4,081	4,807	3,830	3,189	22,054
No Report .5M / A	Grass Reference ETo	307	120	174	195	230	183	153	1,056
Pond	Grass Reference ETo	12	3	5	6	7	5	4	30
								Total	102,784

Water Budget Method Eto Fall/Winter

2016 -Eto rom Cal Poly Irrigation Center data

Amount of Acres Irricated during Fall/Winter proportioned on Irrigation Season Use and Fall/Winter Use

Eto (AF) = (acres)x((crop Eto inches(/12 inches/ft))

Typical	Year Type

Crop Type	Column Name for Lookup	Acres Irrigated (2016)	Oct	Nov	Dec	Jan	Feb	Mar	TOTAL
Cereals -Corn	Corn and Grain Sorghum	0.9	0.1	0.1	0.1	0.1	0.1	0.1	0.5
Cereals - Rice	Rice	6.8	0.6	0.4	0.6	0.5	0.7	0.2	3.0
Cereals - Wheat	Grain and Grain Hay	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Cereals - Other	Grain and Grain Hay	1.3	0.1	0.1	0.1	0.1	0.2	0.4	1.0
Forage - Alfalfa Hay	Alfalfa Hay and Clover	5.1	1.0	0.5	0.5	0.4	0.9	1.6	4.8
Forage - Hay Other	Pasture and Misc. Grasses	36.0	9.1	3.2	2.9	2.9	4.8	6.5	29.4
Forage - Irrigated Pasture	Pasture and Misc. Grasses	824.3	208.1	72.8	67.3	65.3	110.6	147.7	671.8
Forage - Silage	Pasture and Misc. Grasses	0.4	0.1	0.0	0.0	0.0	0.1	0.1	0.3
Forage - Other	Pasture and Misc. Grasses	2.6	0.7	0.2	0.2	0.2	0.3	0.5	2.1
Fruits - Apple	Apple, Pear, Cherry, Plum and Prune	9.8	2.6	0.6	0.8	0.8	1.0	0.6	6.3
Fruits - Berries - All	Apple, Pear, Cherry, Plum and Prune	4.8	1.3	0.3	0.4	0.4	0.5	0.3	3.1
Fruits - Cherries	Apple, Pear, Cherry, Plum and Prune	2.5	0.7	0.2	0.2	0.2	0.3	0.1	1.6
Fruits - Citrus - All	Apple, Pear, Cherry, Plum and Prune	6.6	1.7	0.4	0.5	0.5	0.7	0.4	4.3
Fruits - Grapes - Table	Grape Vines with 80% canopy	2.5	0.2	0.1	0.2	0.2	0.2	0.1	1.1
Fruits - Grapes - Other	Grape Vines with 80% canopy	27.4	2.3	1.5	2.2	2.1	2.8	1.6	12.6
Fruits - Kiwi	Misc. Deciduous	1.0	0.3	0.1	0.1	0.1	0.1	0.0	0.6
Fruits - Peaches	Misc. Deciduous	4.4	1.2	0.3	0.4	0.3	0.4	0.1	2.7
Fruits - Pears	Apple, Pear, Cherry, Plum and Prune	5.3	1.4	0.3	0.4	0.4	0.5	0.3	3.4
Fruits - Plums	Apple, Pear, Cherry, Plum and Prune	6.1	1.6	0.4	0.5	0.5	0.6	0.4	4.0
Fruits - Other	Misc. Deciduous	4.9	1.3	0.3	0.4	0.4	0.5	0.2	3.1
Fruits - Persimmons	Misc. Deciduous	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Fruits - Apricots	Apple, Pear, Cherry, Plum and Prune	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Nursery	Flowers, Nursery and Christmas Tree	16.7	4.5	1.1	1.4	1.3	1.7	0.5	10.5
Cannabis	Cannabis	na	--	--	--	--	--	--	0.0
Nuts	Walnuts	7.5	2.1	0.7	0.6	0.6	0.8	0.4	5.0
Nuts - Walnuts	Walnuts	0.7	0.2	0.1	0.1	0.1	0.1	0.0	0.4
Nuts - Chestnuts	Walnuts	0.7	0.2	0.1	0.1	0.1	0.1	0.0	0.4
Nuts - Pistachios	Pistachio	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Nuts - Almonds	Almonds	0.6	0.2	0.1	0.0	0.0	0.1	0.0	0.4
Other	Grass Reference ETo	32.9	9.9	3.8	2.9	2.4	5.4	11.0	35.3
Golf Course	Grass Reference ETo	43.0	12.9	4.9	3.8	3.2	7.0	14.4	46.1
Other - Parks	Grass Reference ETo	6.7	2.0	0.8	0.6	0.5	1.1	2.2	7.1
Other - Exempt	Grass Reference ETo	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Family Garden, Orchard, YD.	Grass Reference ETo	263.3	78.8	30.3	23.0	19.5	42.8	88.0	282.4
No Report .5M / A	Grass Reference ETo	13.3	4.0	1.5	1.2	1.0	2.2	4.4	14.2
Pond	Grass Reference ETo	0.5	0.1	0.0	0.0	0.0	0.1	0.1	0.4
								Total	1,158

Water Budget Method Eto Fall/Winter

2017 -Eto rom Cal Poly Irrigation Center data

Amount of Acres Irricated during Fall/Winter proportioned on Irrigation Season Use and Fall/Winter Use

Eto (AF) = (acres)x((crop Eto inches(/12 inches/ft))

Wet	Year Type

Crop Type	Column Name for Lookup	Acres Irrigated (2017)	Oct	Nov	Dec	Jan	Feb	Mar	TOTAL
Cereals -Corn	Corn and Grain Sorghum	1.2	0.0	0.1	0.1	0.1	0.1	0.2	0.6
Cereals - Rice	Rice	5.6	0.0	0.0	0.0	0.4	0.6	0.2	1.2
Cereals - Wheat	Grain and Grain Hay	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Cereals - Other	Grain and Grain Hay	1.0	0.0	0.1	0.1	0.1	0.1	0.3	0.7
Forage - Alfalfa Hay	Alfalfa Hay and Clover	4.8	0.7	0.5	0.4	0.4	0.4	1.1	3.6
Forage - Hay Other	Pasture and Misc. Grasses	28.9	6.8	3.1	2.2	2.4	2.6	6.2	23.3
Forage - Irrigated Pasture	Pasture and Misc. Grasses	691.3	162.4	74.9	53.6	56.5	62.2	147.5	557.1
Forage - Silage	Pasture and Misc. Grasses	0.3	0.1	0.0	0.0	0.0	0.0	0.1	0.2
Forage - Other	Pasture and Misc. Grasses	6.8	1.6	0.7	0.5	0.6	0.6	1.4	5.4
Fruits - Apple	Apple, Pear, Cherry, Plum and Prune	8.2	2.0	0.9	0.6	0.7	0.7	1.3	6.1
Fruits - Berries - All	Apple, Pear, Cherry, Plum and Prune	4.5	1.1	0.5	0.3	0.4	0.4	0.7	3.3
Fruits - Cherries	Apple, Pear, Cherry, Plum and Prune	2.1	0.5	0.2	0.2	0.2	0.2	0.3	1.6
Fruits - Citrus - All	Apple, Pear, Cherry, Plum and Prune	6.1	1.5	0.6	0.5	0.5	0.5	1.0	4.6
Fruits - Grapes - Table	Grape Vines with 80% canopy	1.9	0.1	0.2	0.1	0.2	0.2	0.3	1.1
Fruits - Grapes - Other	Grape Vines with 80% canopy	22.6	1.1	2.2	1.7	1.8	2.0	3.5	12.4
Fruits - Kiwi	Misc. Deciduous	0.9	0.2	0.1	0.1	0.1	0.1	0.1	0.6
Fruits - Peaches	Misc. Deciduous	3.7	0.9	0.4	0.3	0.3	0.3	0.5	2.7
Fruits - Pears	Apple, Pear, Cherry, Plum and Prune	5.0	1.2	0.5	0.4	0.4	0.4	0.8	3.7
Fruits - Plums	Apple, Pear, Cherry, Plum and Prune	5.1	1.2	0.5	0.4	0.4	0.4	0.8	3.8
Fruits - Other	Misc. Deciduous	4.1	1.0	0.4	0.3	0.3	0.4	0.6	3.0
Fruits - Persimmons	Misc. Deciduous	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Fruits - Apricots	Apple, Pear, Cherry, Plum and Prune	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Nursery	Flowers, Nursery and Christmas Tree	13.3	3.2	1.4	1.0	1.1	1.2	2.0	9.8
Cannabis	Cannabis	0.5	0.1	0.0	0.0	0.0	0.0	0.1	0.3
Nuts	Walnuts	6.9	1.8	0.7	0.5	0.6	0.6	1.0	5.2
Nuts - Walnuts	Walnuts	0.5	0.1	0.1	0.0	0.0	0.0	0.1	0.4
Nuts - Chestnuts	Walnuts	0.5	0.1	0.1	0.0	0.0	0.0	0.1	0.4
Nuts - Pistachios	Pistachio	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Nuts - Almonds	Almonds	0.5	0.1	0.1	0.0	0.0	0.0	0.1	0.4
Other	Grass Reference ETo	26.6	7.6	2.7	2.2	2.2	2.2	6.1	23.0
Golf Course	Grass Reference ETo	35.2	10.0	3.6	3.0	3.0	2.9	8.0	30.5
Other - Parks	Grass Reference ETo	5.4	1.5	0.5	0.5	0.5	0.4	1.2	4.7
Other - Exempt	Grass Reference ETo	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Family Garden, Orchard, YD.	Grass Reference ETo	220.0	62.5	22.2	18.5	18.5	18.2	50.2	190.2
No Report .5M / A	Grass Reference ETo	12.9	3.7	1.3	1.1	1.1	1.1	3.0	11.2
Pond	Grass Reference ETo	0.4	0.1	0.0	0.0	0.0	0.0	0.1	0.3
								Total	912

Water Budget Method Eto Fall/Winter

2018 -Eto rom Cal Poly Irrigation Center data

Amount of Acres Irricated during Fall/Winter proportioned on Irrigation Season Use and Fall/Winter Use

Eto (AF) = (acres)x((crop Eto inches(/12 inches/ft))

Typical	Year Type

Crop Type	Column Name for Lookup	Acres Irrigated (2018)	Oct	Nov	Dec	Jan	Feb	Mar	TOTAL
Cereals -Corn	Corn and Grain Sorghum	1.2	0.1	0.1	0.1	0.1	0.1	0.1	0.6
Cereals - Rice	Rice	5.7	0.5	0.3	0.5	0.5	0.6	0.2	2.5
Cereals - Wheat	Grain and Grain Hay	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Cereals - Other	Grain and Grain Hay	1.1	0.1	0.1	0.1	0.1	0.2	0.4	0.9
Forage - Alfalfa Hay	Alfalfa Hay and Clover	5.0	1.0	0.5	0.5	0.4	0.8	1.5	4.7
Forage - Hay Other	Pasture and Misc. Grasses	29.7	7.5	2.6	2.4	2.4	4.0	5.3	24.2
Forage - Irrigated Pasture	Pasture and Misc. Grasses	720.4	181.9	63.6	58.8	57.0	96.7	129.1	587.2
Forage - Silage	Pasture and Misc. Grasses	0.3	0.1	0.0	0.0	0.0	0.0	0.1	0.3
Forage - Other	Pasture and Misc. Grasses	7.1	1.8	0.6	0.6	0.6	0.9	1.3	5.8
Fruits - Apple	Apple, Pear, Cherry, Plum and Prune	8.5	2.2	0.6	0.7	0.7	0.9	0.5	5.5
Fruits - Berries - All	Apple, Pear, Cherry, Plum and Prune	4.7	1.2	0.3	0.4	0.4	0.5	0.3	3.0
Fruits - Cherries	Apple, Pear, Cherry, Plum and Prune	2.0	0.5	0.1	0.2	0.2	0.2	0.1	1.3
Fruits - Citrus - All	Apple, Pear, Cherry, Plum and Prune	6.0	1.6	0.4	0.5	0.5	0.6	0.3	3.9
Fruits - Grapes - Table	Grape Vines with 80% canopy	1.9	0.2	0.1	0.2	0.1	0.2	0.1	0.9
Fruits - Grapes - Other	Grape Vines with 80% canopy	23.8	2.0	1.3	1.9	1.9	2.4	1.4	10.9
Fruits - Kiwi	Misc. Deciduous	0.9	0.2	0.1	0.1	0.1	0.1	0.0	0.6
Fruits - Peaches	Misc. Deciduous	3.9	1.1	0.2	0.3	0.3	0.4	0.1	2.4
Fruits - Pears	Apple, Pear, Cherry, Plum and Prune	4.9	1.3	0.3	0.4	0.4	0.5	0.3	3.1
Fruits - Plums	Apple, Pear, Cherry, Plum and Prune	5.3	1.4	0.4	0.4	0.4	0.5	0.3	3.5
Fruits - Other	Misc. Deciduous	8.5	2.3	0.5	0.7	0.7	0.9	0.3	5.3
Fruits - Persimmons	Misc. Deciduous	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Fruits - Apricots	Apple, Pear, Cherry, Plum and Prune	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Nursery	Flowers, Nursery and Christmas Tree	14.0	3.8	0.9	1.1	1.1	1.4	0.4	8.8
Cannabis	Cannabis	0.5	0.1	0.0	0.0	0.0	0.0	0.0	0.3
Nuts	Walnuts	7.2	2.0	0.6	0.6	0.6	0.7	0.3	4.8
Nuts - Walnuts	Walnuts	0.5	0.1	0.0	0.0	0.0	0.1	0.0	0.3
Nuts - Chestnuts	Walnuts	0.4	0.1	0.0	0.0	0.0	0.0	0.0	0.3
Nuts - Pistachios	Pistachio	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Nuts - Almonds	Almonds	0.5	0.1	0.0	0.0	0.0	0.0	0.0	0.3
Other	Grass Reference ETo	26.8	8.0	3.1	2.3	2.0	4.4	9.0	28.7
Golf Course	Grass Reference ETo	36.5	10.9	4.2	3.2	2.7	5.9	12.2	39.2
Other - Parks	Grass Reference ETo	8.2	2.5	0.9	0.7	0.6	1.3	2.7	8.8
Other - Exempt	Grass Reference ETo	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Family Garden, Orchard, YD.	Grass Reference ETo	229.1	68.5	26.3	20.0	17.0	37.2	76.5	245.7
No Report .5M / A	Grass Reference ETo	16.5	4.9	1.9	1.4	1.2	2.7	5.5	17.7
Pond	Grass Reference ETo	0.4	0.1	0.0	0.0	0.0	0.0	0.1	0.3
								Total	1,022

Water Budget Method Eto Fall/Winter

2019 -Eto rom Cal Poly Irrigation Center data

Amount of Acres Irricated during Fall/Winter proportioned on Irrigation Season Use and Fall/Winter Use

Eto (AF) = (acres)x((crop Eto inches(/12 inches/ft))

Wet	Year Type

Crop Type	Column Name for Lookup	Acres Irrigated (2019)	Oct	Nov	Dec	Jan	Feb	Mar	TOTAL
Cereals -Corn	Corn and Grain Sorghum	0.9	0.0	0.1	0.1	0.1	0.1	0.2	0.5
Cereals - Rice	Rice	2.7	0.0	0.0	0.0	0.2	0.3	0.1	0.6
Cereals - Wheat	Grain and Grain Hay	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cereals - Other	Grain and Grain Hay	0.8	0.0	0.1	0.1	0.1	0.1	0.2	0.5
Forage - Alfalfa Hay	Alfalfa Hay and Clover	4.4	0.7	0.5	0.4	0.4	0.4	1.0	3.3
Forage - Hay Other	Pasture and Misc. Grasses	24.2	5.7	2.6	1.9	2.0	2.2	5.2	19.5
Forage - Irrigated Pasture	Pasture and Misc. Grasses	559.7	131.5	60.6	43.4	45.7	50.4	119.4	451.1
Forage - Silage	Pasture and Misc. Grasses	0.2	0.1	0.0	0.0	0.0	0.0	0.1	0.2
Forage - Other	Pasture and Misc. Grasses	5.4	1.3	0.6	0.4	0.4	0.5	1.2	4.3
Fruits - Apple	Apple, Pear, Cherry, Plum and Prune	6.8	1.6	0.7	0.5	0.6	0.6	1.1	5.1
Fruits - Berries - All	Apple, Pear, Cherry, Plum and Prune	3.9	0.9	0.4	0.3	0.3	0.3	0.6	2.9
Fruits - Cherries	Apple, Pear, Cherry, Plum and Prune	1.6	0.4	0.2	0.1	0.1	0.1	0.2	1.2
Fruits - Citrus - All	Apple, Pear, Cherry, Plum and Prune	4.7	1.1	0.5	0.4	0.4	0.4	0.7	3.5
Fruits - Grapes - Table	Grape Vines with 80% canopy	1.5	0.1	0.1	0.1	0.1	0.1	0.2	0.8
Fruits - Grapes - Other	Grape Vines with 80% canopy	19.0	0.9	1.8	1.5	1.6	1.7	3.0	10.4
Fruits - Kiwi	Misc. Deciduous	0.6	0.1	0.1	0.0	0.0	0.1	0.1	0.4
Fruits - Peaches	Misc. Deciduous	3.2	0.8	0.3	0.2	0.3	0.3	0.5	2.3
Fruits - Pears	Apple, Pear, Cherry, Plum and Prune	3.6	0.9	0.4	0.3	0.3	0.3	0.6	2.7
Fruits - Plums	Apple, Pear, Cherry, Plum and Prune	4.2	1.0	0.4	0.3	0.3	0.4	0.7	3.1
Fruits - Other	Misc. Deciduous	5.9	1.4	0.6	0.5	0.5	0.5	0.9	4.4
Fruits - Persimmons	Misc. Deciduous	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Fruits - Apricots	Apple, Pear, Cherry, Plum and Prune	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Nursery	Flowers, Nursery and Christmas Tree	10.7	2.6	1.1	0.8	0.9	0.9	1.6	7.9
Cannabis	Cannabis	0.4	0.1	0.0	0.0	0.0	0.0	0.1	0.3
Nuts	Walnuts	5.6	1.4	0.6	0.4	0.5	0.5	0.8	4.2
Nuts - Walnuts	Walnuts	0.3	0.1	0.0	0.0	0.0	0.0	0.0	0.3
Nuts - Chestnuts	Walnuts	0.3	0.1	0.0	0.0	0.0	0.0	0.1	0.3
Nuts - Pistachios	Pistachio	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Nuts - Almonds	Almonds	0.4	0.1	0.0	0.0	0.0	0.0	0.1	0.3
Other	Grass Reference ETo	20.7	5.9	2.1	1.7	1.7	1.7	4.7	17.9
Golf Course	Grass Reference ETo	28.0	8.0	2.8	2.4	2.4	2.3	6.4	24.2
Other - Parks	Grass Reference ETo	6.4	1.8	0.6	0.5	0.5	0.5	1.5	5.5
Other - Exempt	Grass Reference ETo	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Family Garden, Orchard, YD.	Grass Reference ETo	177.4	50.4	17.9	14.9	14.9	14.6	40.5	153.3
No Report .5M / A	Grass Reference ETo	11.3	3.2	1.1	1.0	1.0	0.9	2.6	9.8
Pond	Grass Reference ETo	0.3	0.1	0.0	0.0	0.0	0.0	0.1	0.2
								Total	741

Water Budget Method Eto Fall/Winter

2020 -Eto rom Cal Poly Irrigation Center data

Amount of Acres Irricated during Fall/Winter proportioned on Irrigation Season Use and Fall/Winter Use

Eto (AF) = (acres)x(crop Eto inches(/12 inches/ft))

Dry	Year Type

Crop Type	Column Name for Lookup	Acres Irrigated (2020)	Oct	Nov	Dec	Jan	Feb	Mar	TOTAL
Cereals -Corn	Corn and Grain Sorghum	1.6	0.1	0.2	0.1	0.1	0.2	0.2	0.9
Cereals - Rice	Rice	4.6	0.0	0.0	0.0	0.4	0.5	0.1	1.0
Cereals - Wheat	Grain and Grain Hay	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Cereals - Other	Grain and Grain Hay	1.4	0.1	0.2	0.1	0.1	0.2	0.4	1.0
Forage - Alfalfa Hay	Alfalfa Hay and Clover	7.4	1.3	1.2	0.8	0.8	1.0	2.0	7.0
Forage - Hay Other	Pasture and Misc. Grasses	39.4	11.0	5.9	2.9	2.1	5.2	8.9	36.0
Forage - Irrigated Pasture	Pasture and Misc. Grasses	941.3	262.8	142.0	69.0	49.4	124.7	211.8	859.8
Forage - Silage	Pasture and Misc. Grasses	0.9	0.2	0.1	0.1	0.0	0.1	0.2	0.8
Forage - Other	Pasture and Misc. Grasses	9.1	2.6	1.4	0.7	0.5	1.2	2.1	8.4
Fruits - Apple	Apple, Pear, Cherry, Plum and Prune	11.8	3.4	1.6	0.9	0.6	1.6	1.9	10.0
Fruits - Berries - All	Apple, Pear, Cherry, Plum and Prune	6.5	1.9	0.9	0.5	0.3	0.9	1.1	5.5
Fruits - Cherries	Apple, Pear, Cherry, Plum and Prune	2.6	0.7	0.4	0.2	0.1	0.3	0.4	2.2
Fruits - Citrus - All	Apple, Pear, Cherry, Plum and Prune	8.7	2.5	1.2	0.6	0.5	1.1	1.4	7.3
Fruits - Grapes - Table	Grape Vines with 80% canopy	2.6	0.1	0.3	0.2	0.1	0.3	0.4	1.5
Fruits - Grapes - Other	Grape Vines with 80% canopy	31.5	1.6	3.9	2.3	1.7	4.2	5.1	18.8
Fruits - Kiwi	Misc. Deciduous	1.0	0.3	0.1	0.1	0.1	0.1	0.1	0.8
Fruits - Peaches	Misc. Deciduous	5.6	1.6	0.8	0.4	0.3	0.7	0.8	4.7
Fruits - Pears	Apple, Pear, Cherry, Plum and Prune	6.4	1.8	0.9	0.5	0.3	0.8	1.0	5.4
Fruits - Plums	Apple, Pear, Cherry, Plum and Prune	7.6	2.2	1.0	0.6	0.4	1.0	1.2	6.4
Fruits - Other	Misc. Deciduous	10.4	3.0	1.5	0.8	0.5	1.4	1.5	8.6
Fruits - Persimmons	Misc. Deciduous	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Fruits - Apricots	Apple, Pear, Cherry, Plum and Prune	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Nursery	Flowers, Nursery and Christmas Tree	16.6	4.8	2.3	1.2	0.9	2.2	2.4	13.8
Cannabis	Cannabis	0.6	0.2	0.1	0.0	0.0	0.1	0.1	0.5
Nuts	Walnuts	9.7	2.9	1.5	0.7	0.5	1.3	1.5	8.4
Nuts - Walnuts	Walnuts	0.4	0.1	0.1	0.0	0.0	0.0	0.1	0.3
Nuts - Chestnuts	Walnuts	0.6	0.2	0.1	0.0	0.0	0.1	0.1	0.5
Nuts - Pistachios	Pistachio	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Nuts - Almonds	Almonds	0.6	0.2	0.1	0.0	0.0	0.1	0.1	0.5
Other	Grass Reference ETo	34.9	11.9	5.2	3.7	3.5	4.2	9.0	37.6
Golf Course	Grass Reference ETo	47.0	16.1	7.1	5.0	4.7	5.7	12.1	50.7
Other - Parks	Grass Reference ETo	10.7	3.6	1.6	1.1	1.1	1.3	2.7	11.5
Other - Exempt	Grass Reference ETo	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Family Garden, Orchard, YD.	Grass Reference ETo	305.8	104.5	45.9	32.6	30.8	37.2	78.8	329.8
No Report .5M / A	Grass Reference ETo	14.6	5.0	2.2	1.6	1.5	1.8	3.8	15.8
Pond	Grass Reference ETo	0.6	0.1	0.1	0.0	0.0	0.1	0.1	0.5
								Total	1,456

ETc Table for Irrigation District Water Balances

Zone 13 Monthly Evapotranspiration

Surface Irrigation Wet Year

IRRIGATION TRAINING AND RESEARCH CENTER, California Polytechnic State University, San Luis Obispo, http://www.itrc.org/etdata/index.html

Table includes adjustments for bare spots and reduced vigor

	Wet Year January inches	February inches	March inches	April inches	May inches	June inches	July inches	August inches	Septembe inches	October inches	November inches	December inches	Annual inches
Precipitation	8.8	9.21	3.72	2.76	3.33	1.22	0.08	0	0.77	0.63	3.94	1.2	35.65
Grass Reference ETo	1.01	0.99	2.74	3.84	3.92	5.85	8.24	8.25	4.86	3.41	1.21	1.01	45.33
Apple, Pear, Cherry, Plum and Prune	0.98	1.05	1.88	2.53	3.6	5.37	7.23	7.14	4.48	2.89	1.25	0.92	39.33
Apples, Plums, Cherries etc w/covercrop	1.14	1.06	2.97	3.98	4.17	6.15	8.89	8.95	5.16	3.38	1.3	1.1	48.24
Almonds	0.98	1.05	1.88	2.47	3.49	5.02	6.95	6.84	4.09	2.91	1.31	0.92	37.91
Almonds w/covercrop	1.13	1.06	2.82	3.61	4.06	5.69	8.13	8.1	4.86	3.34	1.33	1.08	45.22
Immature Almonds	0.98	1.05	1.84	2.29	3.1	3.83	4.96	4.83	3.22	2.08	1.26	0.92	30.37
Walnuts	0.98	1.04	1.77	2.53	3.49	5.36	7.78	8.1	4.86	3.06	1.3	0.92	41.19
Pistachio	0.98	1.05	1.77	2.53	3.3	4.95	7.78	8.01	4.93	3.04	1.31	0.92	40.58
Pistachio w/ covercrop	1.13	1.06	2.82	3.57	3.96	5.9	8.67	8.91	5.31	3.61	1.32	1.08	47.34
Immature Pistachio	0.98	1.05	1.77	2.25	2.96	3.42	5.36	5.58	3.47	2.25	1.25	0.92	31.26
Misc. Deciduous	0.98	1.05	1.77	2.39	3.23	4.69	7.08	6.96	4.52	2.89	1.26	0.92	37.73
Grain and Grain Hay	1.04	1.08	2.94	4.09	3.45	1.33	0.08	0	0.56	0.5	1.17	0.98	17.23
Rice	0.95	1.21	0.37	1.36	6.3	7.55	9.43	8.6	2.45	1	0.67	0.98	40.87
Corn and Grain Sorghum	0.98	1.07	1.98	2.42	3.27	5.65	8.19	7.18	1.24	0.5	1.16	0.93	34.58
Misc. field crops	0.98	1.07	1.98	2.42	3.28	5.45	7.44	3.18	0.57	0.5	1.16	0.93	28.95
Alfalfa Hay and Clover	1.11	1.08	2.76	4.25	4.33	6.2	6.9	6.76	4.17	1.77	1.28	1.09	41.72
Pasture and Misc. Grasses	0.98	1.08	2.56	3.68	4.07	5.71	7.57	7.59	4.56	2.82	1.3	0.93	42.84
Small Vegetables	1.03	1.08	2.65	2.02	2.55	1.26	0.08	1.04	1.23	1.25	1.26	1.06	16.5
Tomatoes and Peppers	0.98	1.07	2.29	2.39	3.52	5.91	7.14	0.84	0.57	0.5	1.16	0.93	27.29
Strawberries	0.98	1.07	1.98	2.42	3.28	5.45	7.44	3.18	0.57	0.5	1.16	0.93	28.95
Flowers, Nursery and Christmas Tree	0.98	1.05	1.77	2.39	3.23	4.69	7.08	6.96	4.52	2.89	1.26	0.92	37.73
Misc Subtropical	0.98	1.05	1.77	2.39	3.23	4.69	7.08	6.96	4.52	2.89	1.26	0.92	37.73
Grape Vines with 80% canopy	0.98	1.05	1.88	2.69	3.71	4.91	5.74	5.02	2.94	0.57	1.16	0.92	31.57
Grape Vines with cover crop (80% canopy)	1.11	1.06	2.7	3.49	4.03	5.2	6.79	6.08	3.11	1.93	1.23	1.07	37.82
Immature Grapes Vines with 50% canopy	0.98	1.06	1.84	2.41	3.25	3.95	4.33	3.67	2.32	0.55	1.16	0.93	26.43
Idle	0.98	1.08	1.75	1.99	2.56	1.26	0.08	0	0.57	0.5	1.16	0.93	12.85
Cannabis	0.98	1.05	1.77	2.39	3.23	4.69	7.08	6.96	4.52	2.89	1.26	0.92	37.73

ETc Table for Irrigation District Water Balances
Zone 13 Monthly Evapotranspiration
Surface Irrigation Dry Year
IRRIGATION TRAINING AND RESEARCH CENTER, California Polytechnic State University, San Luis Obispo, http://www.itrc.org/etdata/index.html
Table includes adjustments for bare spots and reduced vigor

	Dry Year January inches	February inches	March inches	April inches	May inches	June inches	July inches	August inches	Septembe inches	October inches	November inches	December inches	Annual inches
Precipitation	4.67	7.74	1.95	1.59	0.75	0.35	0	0.19	0	1.64	2.86	0.45	22.19
Grass Reference ETo	1.21	1.46	3.09	4.7	6.81	7.64	9	7.17	5.97	4.1	1.8	1.28	54.24
Apple, Pear, Cherry, Plum and Prune	0.63	1.58	1.96	2.19	3.59	6.09	7.95	6.24	5	3.46	1.64	0.88	41.21
Apples, Plums, Cherries etc w/covercrop	1.26	1.61	3.29	4.39	6.35	8.13	9.74	7.71	6.38	3.89	2.02	1.4	56.17
Almonds	0.63	1.58	1.96	2.14	3.21	5.51	7.43	6.03	4.98	3.39	1.88	0.88	39.62
Almonds w/covercrop	1.15	1.61	3.03	3.77	5.45	6.92	8.87	7.11	5.84	3.75	1.96	1.34	50.82
Immature Almonds	0.63	1.58	1.88	1.9	2.31	4.2	5.22	4.32	3.69	2.47	1.75	0.88	30.82
Walnuts	0.63	1.58	1.87	2.25	3.23	5.52	8.87	7.19	5.7	3.54	1.89	0.88	43.16
Pistachio	0.63	1.58	1.72	2.18	2.61	5.07	8.5	7.19	5.81	3.63	1.9	0.88	41.69
Pistachio w/ covercrop	1.15	1.61	3.03	3.82	5.09	6.86	9.46	7.78	6.5	4.25	2.03	1.36	52.94
Immature Pistachio	0.63	1.58	1.72	1.83	1.66	3.62	5.65	4.85	3.89	2.64	1.73	0.88	30.68
Misc. Deciduous	0.63	1.58	1.72	2	2.4	4.89	7.7	6.26	5.15	3.45	1.68	0.88	38.34
Grain and Grain Hay	0.78	1.61	3.32	4.86	3.31	0.34	0	0.17	0	0.63	1.48	0.97	17.47
Rice	0.95	1.21	0.37	1.36	6.3	7.55	9.43	8.6	2.45	1	0.67	0.98	40.87
Corn and Grain Sorghum	0.63	1.58	1.76	1.9	3.09	7.07	8.94	6.33	0.84	0.62	1.48	0.88	35.12
Misc. field crops	0.63	1.58	1.76	1.9	2.97	6.79	8.08	2.62	0	0.63	1.48	0.88	29.32
Alfalfa Hay and Clover	1.23	1.61	3.23	4.95	6.13	6.74	7.43	6.39	4.95	2.11	1.87	1.35	47.99
Pasture and Misc. Grasses	0.63	1.59	2.7	4.16	6.43	7.11	8.29	6.67	5.41	3.35	1.81	0.88	49.03
Small Vegetables	1.01	1.6	3	1.65	0.64	0.33	0	1.06	1.34	1.55	1.82	1.29	15.28
Tomatoes and Peppers	0.63	1.58	1.97	2	4.16	7.53	7.55	0.67	0	0.63	1.48	0.88	29.07
Strawberries	0.63	1.58	1.76	1.9	2.97	6.79	8.08	2.62	0	0.63	1.48	0.88	29.32
Flowers, Nursery and Christmas Tree	0.63	1.58	1.72	2	2.4	4.89	7.7	6.26	5.15	3.45	1.68	0.88	38.34
Misc Subtropical	0.63	1.58	1.72	2	2.4	4.89	7.7	6.26	5.15	3.45	1.68	0.88	38.34
Grape Vines with 80% canopy	0.63	1.58	1.96	2.36	4.16	5.51	6.05	4.69	2.74	0.62	1.49	0.88	32.67
Grape Vines with cover crop (80% canopy)	1.05	1.61	2.82	3.57	5	6.3	7.08	5.59	3.34	1.85	1.75	1.24	41.19
Immature Grapes Vines with 50% canopy	0.63	1.58	1.88	2.02	2.96	4.36	4.56	3.52	1.9	0.67	1.49	0.88	26.44
Cannabis	0.63	1.58	1.72	2	2.4	4.89	7.7	6.26	5.15	3.45	1.68	0.88	38.34
Idle	0.63	1.59	1.71	1.47	0.64	0.33	0	0.17	0	0.62	1.48	0.88	9.51

ETc Table for Irrigation District Water Balances

Zone 13 Monthly Evapotranspiration

Surface Irrigation Typical Year

IRRIGATION TRAINING AND RESEARCH CENTER, California Polytechnic State University, San Luis Obispo, http://www.itrc.org/etdata/index.html

Table includes adjustments for bare spots and reduced vigor

	Typical Year												
	January	February	March	April	May	June	July	August	Septembe	October	November	December	Annual
	inches	inches	inches	inches	inches	inches	inches	inches	inches	inches	inches	inches	inches
Precipitation	11.46	0.79	0.37	1.1	0.33	0.43	0.12	0.28	0.08	1.56	2.22	2.46	21.2
Grass Reference ETo	0.89	1.95	4.01	4.8	6.98	6.74	8.27	7.59	5.79	3.59	1.38	1.05	53.03
Apple, Pear, Cherry, Plum and Prune	0.93	1.22	0.7	1.75	3.23	5.44	7.26	6.73	4.96	3.14	0.79	0.98	37.14
Apples, Plums, Cherries etc w/covercrop	0.97	2.18	3.35	3.9	6.38	7.05	8.87	8.25	6.17	3.57	1.27	1.17	53.11
Almonds	0.93	1.22	0.7	1.7	2.91	4.9	6.74	6.53	4.88	3.21	1.14	0.98	35.84
Almonds w/covercrop	0.97	2.06	2.65	3.43	5.31	6.32	7.97	7.51	5.58	3.56	1.27	1.16	47.81
Immature Almonds	0.94	1.22	0.59	1.45	2.29	3.58	4.92	4.6	3.5	2.39	0.95	0.98	27.41
Walnuts	0.93	1.22	0.57	1.85	2.84	5.05	8.14	7.6	5.45	3.31	1.07	0.99	39.03
Pistachio	0.93	1.22	0.37	1.71	2.23	4.54	7.78	7.6	5.77	3.25	1.19	0.98	37.59
Pistachio w/ covercrop	0.97	2.06	2.64	3.55	4.96	6.22	8.6	8.27	6.23	3.83	1.3	1.16	49.78
Immature Pistachio	0.94	1.22	0.37	1.35	1.33	3.32	5.15	5.25	3.97	2.48	0.95	0.98	27.3
Misc. Deciduous	0.93	1.22	0.37	1.53	2.02	4.36	7.03	6.75	4.97	3.26	0.76	0.98	34.19
Grain and Grain Hay	0.96	2.04	4.07	4.9	3.66	0.42	0.1	0.26	0.07	1	0.67	1.03	19.19
Rice	0.95	1.21	0.37	1.36	6.3	7.55	9.43	8.6	2.45	1	0.67	0.98	40.87
Cotton	0.95	1.21	0.96	1.26	1.62	5.27	8.16	7.08	1.26	1.01	0.67	0.98	30.42
Corn and Grain Sorghum	0.95	1.21	1.12	2.03	2.5	6.3	8.22	6.78	0.85	1	0.67	0.98	32.62
Misc. field crops	0.95	1.21	1.12	2.04	2.41	5.97	7.45	2.91	0.07	1	0.67	0.98	26.78
Alfalfa Hay and Clover	0.98	2.04	3.68	4.03	5.87	6.25	6.89	6.16	4.81	2.38	1.1	1.15	45.33
Pasture and Misc. Grasses	0.95	1.61	2.15	3.91	6.45	6.26	7.64	7.02	5.27	3.03	1.06	0.98	46.32
Small Vegetables	0.97	1.66	3.44	2.08	0.32	0.4	0.1	1.31	1.46	1.89	1.14	1.12	15.9
Tomatoes and Peppers	0.95	1.21	1.06	1.48	3.37	6.66	7.08	1.03	0.07	1	0.67	0.98	25.55
Strawberries	0.95	1.21	1.12	2.04	2.41	5.97	7.45	2.91	0.07	1	0.67	0.98	26.78
Flowers, Nursery and Christmas Tree	0.93	1.22	0.37	1.53	2.02	4.36	7.03	6.75	4.97	3.26	0.76	0.98	34.19
Misc Subtropical	0.93	1.22	0.37	1.53	2.02	4.36	7.03	6.75	4.97	3.26	0.76	0.98	34.19
Grape Vines with 80% canopy	0.94	1.22	0.7	1.87	3.7	4.95	5.57	5.22	2.57	1	0.66	0.98	29.38
Grape Vines with cover crop (80% canopy)	0.97	1.95	2.26	2.94	5.19	5.46	6.44	6.08	3.29	2.49	0.96	1.15	39.17
Immature Grapes Vines with 50% canopy	0.94	1.22	0.59	1.54	2.81	3.84	4.37	3.61	2.01	1	0.66	0.98	23.57
Idle	0.95	1.2	0.37	0.98	0.32	0.4	0.1	0.26	0.07	0.99	0.68	0.98	7.31
Cannabis	0.93	1.22	0.37	1.53	2.02	4.36	7.03	6.75	4.97	3.26	0.76	0.98	34.19

Growing Season Assumed to be April through September

Uses fao.org effective precipitation methodology

Station reference: https://www.cnrfc.noaa.gov/monthly_precip_2016.php

Effective Precip (AF) = (monthly precip/12 in./ft) x (effective %) x (acres)

WY 2016 Precipitation Data (in)

ID	Location	2015 OCT	NOV	DEC	2016 JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
AUBC1	AUBURN	0	3.56	6.44	5.19	1.4	7.55	1.21	1.28	0	0	0	0
COFC1	COLFAX	0.67	4.72	9.31	11.5	1.68	13.69	2.39	0.98	0	0	0	0.02
GRAC1	GRASS VALLEY NO. 2	0.7	5.73	12.3	15.05	1.87	16.62	2.17	1.21	0	0	0	0
NVDC1	NEVADA CITY	0.99	5.1	13.84	17.44	1.94	19.22	2.5	1.72	0	0	0	0
Growing Season Average Precip		0.59	4.78	10.47	12.30	1.72	14.27	2.07	1.30	0.00	0.00	0.00	0.01
Effective Precip % Based on FAO Table		29%	58%	69%	65%	38%	56%	41%	35%	--	--	--	0%
Effective Precip (in)		0.17	2.78	7.19	7.95	0.66	8.05	0.85	0.45	0.00	0.00	0.00	0.00
Irrigated Acres (Crop Reports)		1,338						30,629					
Water Year Effective Precip (AF)		2,988						3,324					

WY 2017 Precipitation Data (in)

ID	Location	2016 OCT	NOV	DEC	2017 JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
AUBC1	AUBURN	3.13	3.3	3.42	10	8.35	3.66	4.09	0.58	0.2	0	0	0
COFC1	COLFAX	9.93	6.39	10.81	19.05	15.76	5.83	8.37	0.36	0.83	0	0.01	0
GRAC1	GRASS VALLEY NO. 2	10.29	7.19	13.35	25.93	22.66	6.65	8.86	0.35	0.5	0	0.01	0.14
NVDC1	NEVADA CITY	12.14	7.53	9.97	27.6	26.65	7.38	11.4	0.11	0.75	0	0.01	0.23
Growing Season Average Precip		8.87	6.10	9.39	20.65	18.36	5.88	8.18	0.35	0.57	0.00	0.01	0.09
Effective Precip % Based on FAO Table		69%	64%	69%	1%	26%	63%	69%	0%	28%	--	0%	0%
Effective Precip (in)		6.14	3.89	6.51	0.28	4.79	3.70	5.61	0.00	0.16	0.00	0.00	0.00
Irrigated Acres (Crop Reports)		1,127						31,470					
Water Year Effective Precip (AF)		2,376						15,134					

WY 2018 Precipitation Data (in)

ID	Location	2017 OCT	NOV	DEC	2018 JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
AUBC1	AUBURN	0.78	5.82	0.52	4.62	1.13	7.59	0.89	0.15	0	0	0	0
COFC1	COLFAX	0.77	10.49	0.79	8.03	0.95	16.75	5.23	0.15	0	0	0	0
GRAC1	GRASS VALLEY NO. 2	1.04	12.76	1.06	9.72	0.75	15.93	6.27	0.43	0	0	0	0
NVDC1	NEVADA CITY	0.93	14.23	0.88	10.01	0.28	18.28	4.82	0.48	0	0	0	0
Growing Season Average Precip		0.88	10.83	0.81	8.10	0.78	14.64	4.30	0.30	0.00	0.00	0.00	0.00
Effective Precip % Based on FAO Table		31%	68%	31%	68%	30%	54%	56%	0%	--	--	--	--
Effective Precip (in)		0.27	7.38	0.25	5.54	0.24	7.96	2.40	0.00	0.00	0.00	0.00	0.00
Irrigated Acres (Crop Reports)		1,181						31,835					
Water Year Effective Precip (AF)		2,130						6,366					

WY 2019 Precipitation Data (in)

ID	Location	2018 OCT	NOV	DEC	2019 JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
AUBC1	AUBURN	1.19	5.56	1.7	4.92	9.8	3.78	0.98	1.6	0	0	0	2.15
COFC1	COLFAX	0.03	7.99	4.35	12.29	18.34	8	2.36	4.41	0.05	0	0	2.24
GRAC1	GRASS VALLEY NO. 2	0.92	8.38	4.72	13.1	21.93	8.17	2.89	5.37	0.36	0	0	2.31
NVDC1	NEVADA CITY	0.53	8.61	4.87	14.2	26.76	8.64	3.49	5.83	1.05	0	0	2.66
Growing Season Average Precip		0.67	7.64	3.91	11.13	19.21	7.15	2.43	4.30	0.37	0.00	0.00	2.34
Effective Precip % Based on FAO Table		29%	68%	54%	68%	18%	67%	44%	56%	0%	--	--	43%
Effective Precip (in)		0.20	5.17	2.10	7.52	3.37	4.77	1.07	2.40	0.00	0.00	0.00	1.01
Irrigated Acres (Crop Reports)		915						32,205					
Water Year Effective Precip (AF)		1,763						12,012					

WY 2020 Precipitation Data (in)

ID	Location	2019 OCT	NOV	DEC	2020 JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
AUBC1	AUBURN	0.01	0.55	4.38	2.88	0	5.29	2.24	2.34	0.17	0.01	0	0.01
COFC1	COLFAX	0	2.6	9.4	4.27	0.04	7.66	4.79	4.52	0.01	0	0	0.01
GRAC1	GRASS VALLEY NO. 2	0.04	1.68	11.54	4.07	0	7.38	4.69	4.11	0.03	0	0.02	0.02
NVDC1	NEVADA CITY	0.05	0.71	12.01	4.8	0	8.75	5.3	4.23	0	0	0	0.03
Growing Season Average Precip		0.03	1.39	9.33	4.01	0.01	7.27	4.26	3.80	0.05	0.00	0.01	0.02
Effective Precip % Based on FAO Table		0%	36%	69%	54%	0%	67%	56%	53%	0%	0%	0%	0%
Effective Precip (in)		0.00	0.49	6.47	2.17	0.00	4.87	2.36	2.01	0.00	0.00	0.00	0.00
Irrigated Acres (Crop Reports)		1,542						32,323					
Water Year Effective Precip (AF)		1,799						11,781					

Water Budget Method (INFLOW) - Effective Precipitation

Effective precipitation estimates

http://www.fao.org/3/s2022e/s2022e03.htm

Precip mm/month	Effective Precip mm/month	Precip in/month	Effective Precip in/month	as Percentage
0	0	0.00	0.00	0%
10	0	0.39	0.00	0%
20	2	0.79	0.08	10%
30	8	1.18	0.31	27%
40	14	1.57	0.55	35%
50	20	1.97	0.79	40%
60	26	2.36	1.02	43%
70	32	2.76	1.26	46%
80	39	3.15	1.54	49%
90	47	3.54	1.85	52%
100	55	3.94	2.17	55%
110	63	4.33	2.48	57%
120	71	4.72	2.80	59%
130	79	5.12	3.11	61%
140	87	5.51	3.43	62%
150	95	5.91	3.74	63%
160	103	6.30	4.06	64%
170	111	6.69	4.37	65%
180	119	7.09	4.69	66%
190	127	7.48	5.00	67%
200	135	7.87	5.31	68%
210	143	8.27	5.63	68%
220	151	8.66	5.94	69%
230	159	9.06	6.26	69%
240	167	9.45	6.57	70%
250	175	9.84	6.89	70%

Agricultural Water Use Efficiency

A Proposed Methodology for Quantifying the Efficiency of Agricultural Water Use - DWR

Method 1 - Crop Consumptive Use Fraction (CCUF) = (ETAW)/(AW)

2020

Evapotranspiration of Applied Water (ETAW)	Applied Water (AW)	Crop Consumptive Use Fraction
Acre-Feet per Year	Acre-Feet per Year	
90,660	109,016	83%

ETAW = Evapotranspiration (AWMP Table 5-2) - Effective Precip (AWMP Table 5-1)

AW from AWMP Table 3-1