
Agricultural Water Management Plan

Prepared Pursuant to Water Code Section 10826

Lone Tree Mutual Water Company

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Adopted on June 22, 2016

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Section I: Introduction

A. Description of Previous Water Management Activities

Lone Tree Mutual Water Company (LTMWC or Company) is located in southern Merced County and is bisected by the Eastside Bypass. The primary water source for the Company is groundwater, making up an average of 73% of the total water deliveries. The remaining water is a combination of surface supplies diverted from the Eastside Bypass and recirculated tail and tile water. Previous water management activities include metered water deliveries, tail-water recirculation, and conjunctive groundwater use. These activities are continued in this Agriculture Water Management Plan (AWMP).

B. Coordination Activities

1. Notification of AWMP Preparation
A Notice of Preparation of this AWMP was sent on April 8, 2016 to Merced County, San Luis Canal Company, Central California Irrigation District, Turner Island Water District, and Merced Irrigation District. A copy of the Notice of Preparation is included in Appendix A.
2. Public Participation
Lone Tree Mutual Water Company conducted a public hearing on the LTMWC AWMP on June 22, 2016, for which “equivalent notice” was provided pursuant to Section 10841 of the Water Code by, *inter alia*, directly notifying LTMWC shareholders, with receipt acknowledged, and publishing notice in a newspaper of general circulation, the Los Banos Enterprise, on June 10 and June 16, 2016. No written comments were received from the public about this AWMP. A public hearing to receive comments on the AWMP was held on June 22, 2016. No member of the public attended the meeting and no public comments were received.

C. AWMP Adoption and Submittal

1. AWMP Adoption
A copy of the signed resolution adopting this AWMP is included in Appendix A.
2. AWMP Submittal
On June 28, 2016, copies of the Adopted AWMP were mailed to:
The Merced County Library
The California State Library
Department of Water Resources
The Merced County Local Agency Formation Commission
3. AWMP Availability
Copies of this AWMP are available from LTMWC upon request.

D. AWMP Implementation Schedule

See Section VII for the Implementation Schedule.

Section II: Description of the Agricultural Water Supplier and Service Area

A. Physical Characteristics

1. Size of the service area.

The Mutual Water Company was created in September of 1990 to provide irrigation water to agricultural lands within its boundaries. LTMWC has a gross acreage of approximately 12,718 acres, which includes active agriculture, rural residences, and canals, drains and sloughs. The Company's assessed acreage is 11,574 acres, all of which is irrigable agriculture.

2. Location of the service area and water management facilities.

LTMWC is located in Merced County, in the Central San Joaquin Valley of California (see Figure 1) about 4 miles west of the unincorporated community of El Nido, and 11 miles south of the city of Merced. It's west boundary is the San Joaquin River, Washington Road on the South, Turner Island Irrigation District, the Merced National Wildlife refuge, and other agricultural property on the North, and other irrigated agricultural property on its eastern boundary. Figure 2 shows the Company's service area and principal irrigation facilities.

Irrigation facilities within the Service Area include approximately 23 miles of earthen canals, 4 miles of lined canals, 23 miles of drains, and 16 miles of pipeline. LTMWC owns and operates 94 wells, which pump into the canals, drains, and sloughs to contribute to the Company's water supply. The volume of groundwater pumped varies from year to year depending on the availability of surface water supplies. This is discussed in more detail in Section III. The Company has 74 low lift pumps for transferring water within the service area and delivering water to specific properties.

3. Terrain and soils

The Company is located in the very center of the San Joaquin Valley, with the meandering San Joaquin River defining the Company's west boundary line. The topography of the Service area slopes gradually in a northwesterly direction from the Company's outer southeasterly boundary towards the north west corner of the Service area, adjoining Turner Island W.D. The lowest elevation within the northwest corner of the Service area is 94' above MSL and the highest elevation on the north east corner is approximately 116 feet above mean sea level (MSL). The generally flat terrain has an average north-south slope of about 1.8 feet per mile and an east-west average slope of approximately 5 feet per mile.

Figure 1.

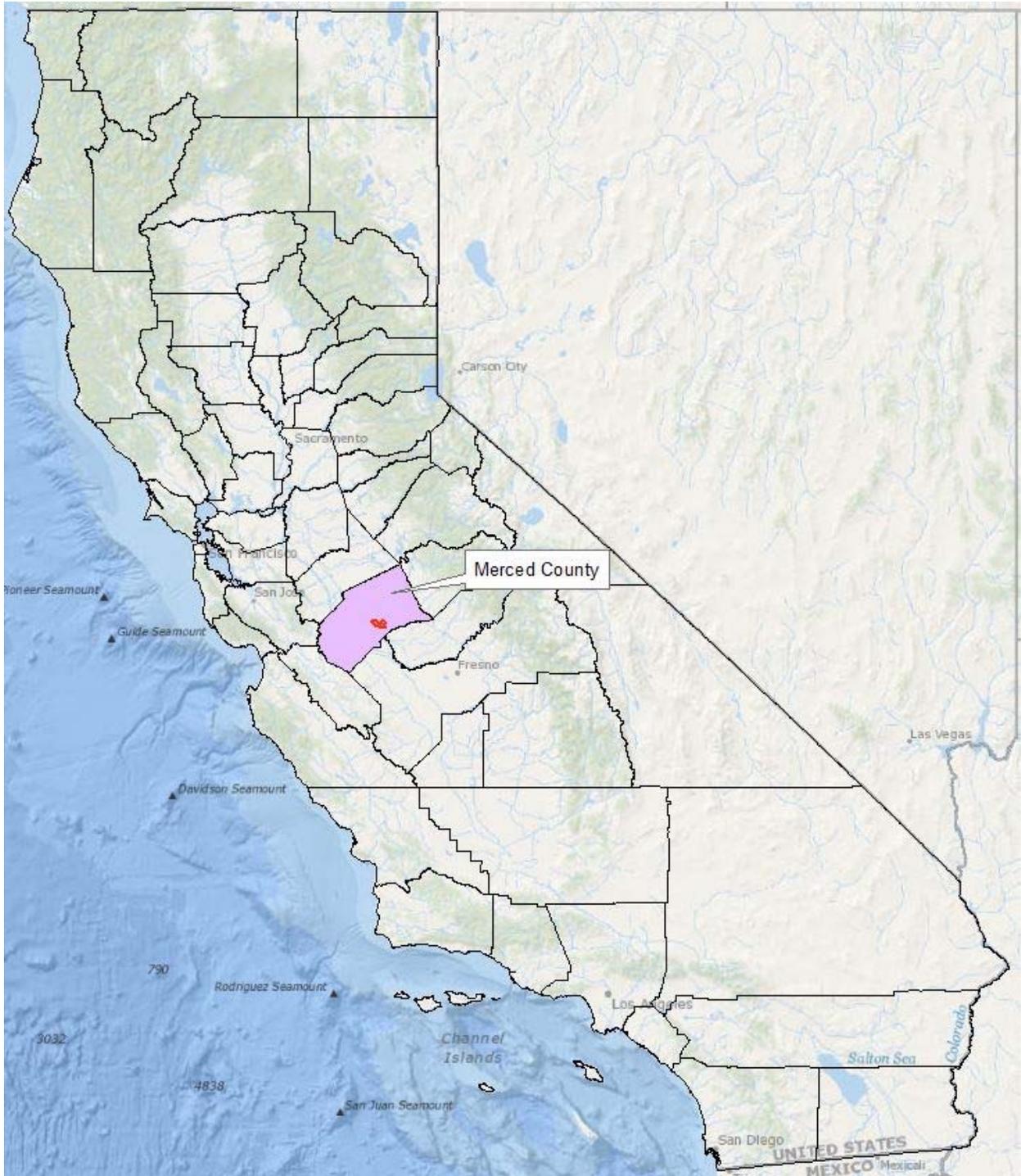
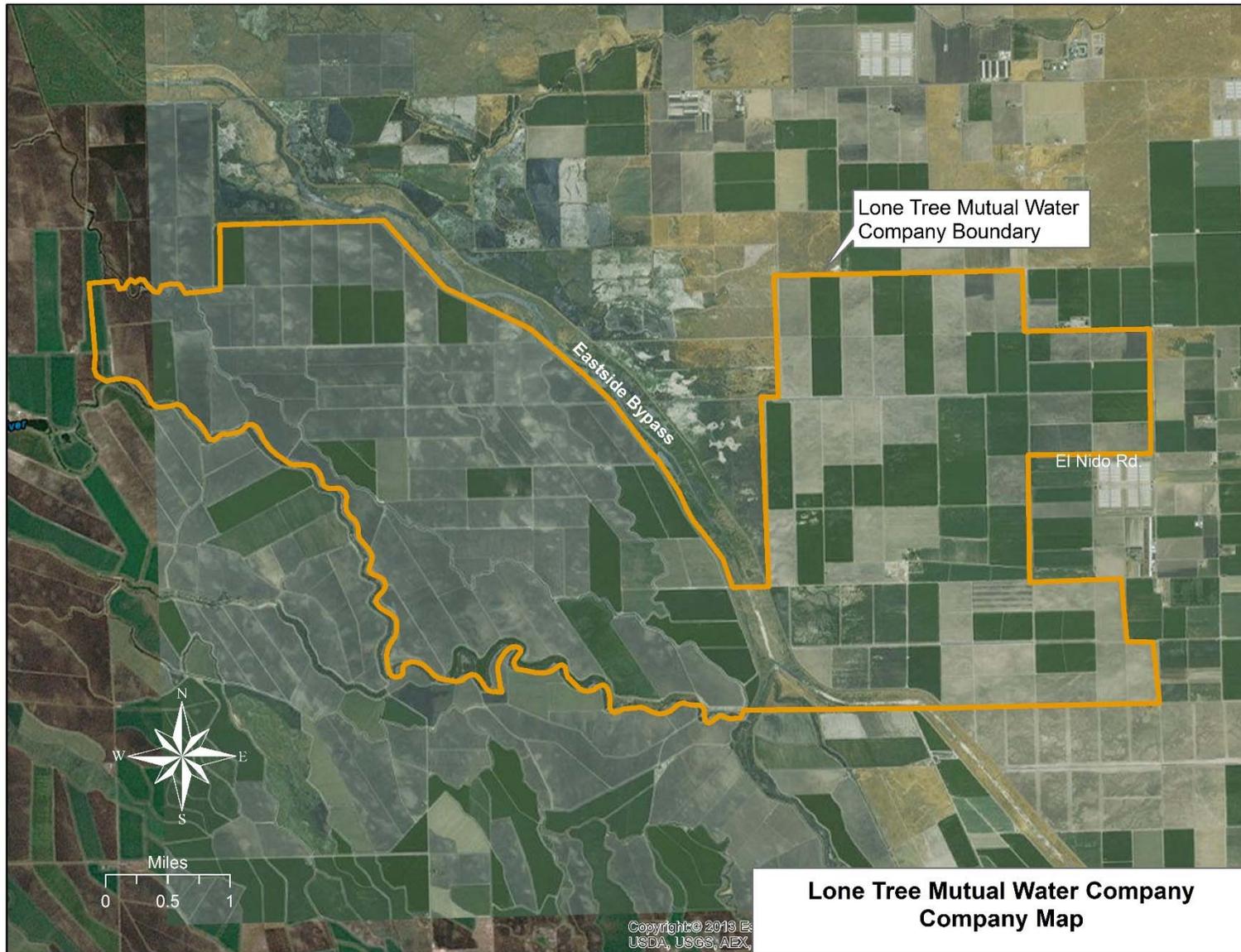


Figure 2.



The Company service area encompasses soils that are primarily poorly to moderately drained sandy loams, silt/loam and clay/loam type soils. The Corcoran Clay is an impermeable hydrologic barrier that ranges from 180 to 260 feet below the surface. Recharge of the aquifer above Corcoran clay layer is limited due to smaller clay lenses and the Corcoran Clay prevents any economically feasible attempt to directly recharge the aquifer below that clay layer within the Service area boundary. Groundwater from below the Corcoran clay in the Service area is typically satisfactory in quality, while the shallower groundwater is poorer in quality due to concentrations of boron and chlorides.

4. Climate

The climate in the region is typical of the central San Joaquin Valley. The Merced region is semi-arid. Average annual rainfall is 10.23 inches. Spring seasons are usually mild with some wind, summers hot and dry, autumns cool and brisk, and winter seasons are typically characterized by fog and rain with temperatures seldom reaching the freezing point. Average precipitation was measured at the LTMWC headquarters, and maximum and minimum temperatures were measured at the Merced Airport NOAA station

Table 1 indicates average monthly precipitation from 1991 to 2015. Monthly rainfall ranges from 0.0 to about 2.05 inches. About 70% of the rainfall typically occurs between the months of December to March. Maximum and minimum average monthly temperatures for the period 1981-2010 are listed in Table 2.

Table 1: Average Monthly Precipitation – 1991-2015

MONTH	Average Monthly Precipitation
JANUARY	2.05
FEBRUARY	1.98
MARCH	1.43
APRIL	0.80
MAY	0.47
JUNE	0.14
JULY	0.03
AUGUST	0.01
SEPTEMBER	0.05
OCTOBER	0.52
NOVEMBER	0.87
DECEMBER	1.88
TOTAL	10.23

Source: LTMWC Headquarters measurements

Table 2: Average Temperatures.

Month	Average High	Average Low
	(°F)	(°F)
January	55.7	37.4
February	62.3	39.9
March	68.5	42.6
April	75.4	45.7
May	83.9	52.0
June	91.3	57.4
July	96.7	61.5
August	95.6	60.2
September	90.5	55.9
October	80.7	48.7
November	64.1	40.2
December	55.9	37.1

Source: NOAA National Climate Data Center

As reflected in Table 2, the 30-year maximum and minimum temperatures occur respectively during July and December

B. Operational Characteristics

1. Operating rules and regulations

A copy of the Company's Rules and Regulations are included in Appendix B. The purpose of these rules is to provide guidance to the Company Manager and staff for the economic and equitable service of water to all of the water users within Lone Tree Mutual Water Company. They outline the whole process for ordering, delivering, measuring, and billing for water. Some key points of the regulations are listed below:

- Water deliveries must be requested by the water user 48 hours in advance of delivery need.
- Water allocation is based on the water user's shares in the Company as a percentage of the total company shares. This provides an equitable allocation of water (on a per-acre basis) to all water users.
- Flow meters are required on all customer pumps that feed filter stations.
- Ditchtenders measure water delivered to customer fields by low lift pump or gravity flow out of company canals, utilizing actual siphon pipe counts and head pressure differential measurements.
- The District reserves the right to refuse water delivery to water users wasting or improperly using water.

2. Water delivery measurements or calculations

Within the Company service area, 42% of the acreage receives deliveries at the Customer's filter/booster stations with propeller or magnetic meters, measuring the volume of water used. The remaining acreage receive deliveries from gravity turnouts on canals. These deliveries are measured by the ditch tender following the procedures outlined in University of California Leaflet 2956. These measurements are translated into volumes to determine deliveries.

All flow meters are factory certified to be within 5% accuracy and gravity delivery measurements are accurate to within 10%. All meter installations are inspected by Company Staff to confirm that the meter is installed correctly and is operating. In the case where meters are broken or installed incorrectly, the Company may withhold water deliveries until the meter is fixed or installation is corrected. It is the obligation of the water user to maintain and replace the flow meter as necessary.

3. Water rate schedules and billing

Company Staff reads each customer meter or completes gravity flow calculation daily and uses the readings to deliver an irrigation completion card to the office, where the calculated delivered water is entered into the customer's usage record. Water rates are based on actual usage and are charged one rate for the winter period (Nov 1-Apr 30) and another rate for the summer period (May 1-Oct 31). The customers are billed on a published schedule of progress payments throughout the water year, with a true-up billing at year's end based on the actual usage. The charges for actual water usage represent the Company's costs of delivery operations, including personnel, power, repairs and maintenance. Customers also pay a fixed maintenance fee per share ownership in the Company to pay for fixed costs and capital expenditures.

4. Water shortage allocation policies – Drought Management Plan.

The Water shortage allocation policy is incorporated into the Company's Rules and Regulations for the Rotation and Delivery of water (see Appendix B). The water volume delivered to each water user is based on both the percentage of that water user's shares compared to the whole of the Company as well as the total available water. The District has developed a Drought Management Plan Process which is applied in all years but becomes a crucial part of water supply planning during drought conditions.

Drought Management Plan Process:

- Early Planning: The Company Directors and shareholders are advised at year end of the condition and volume of water available from

groundwater pumps. At that time the possibilities for available surface water from adjoining districts or potential flood releases are reviewed. Based on the information presented, growers can adapt their crop plan and planting intentions.

- Supply Update: The water supply forecast is reviewed in March based on weather year type and the probability of surface water availability is considered. In extremely dry years, water users will modify their planting decisions to account for the reduced water supply. These modifications can include field fallowing or changes in crop selection to crops that require less water.
- Growing Season Operations: During the growing season, Staff carefully account for all water delivered and scrutinize Company water delivery operations and grower water use. Any operations that result in water waste are quickly corrected.

Section III: Description of Quantity of Water Uses

A. Agriculture Water Use

All water use within LTMWC is for agricultural purposes. The Company water supplies come primarily from groundwater, drainage water, and surface water from adjoining districts when available. In wet years the company diverts San Joaquin river flood releases from the Middle Eastside bypass. Table 3 shows the monthly deliveries by LTMWC along with total annual surface and groundwater deliveries in terms of the 2007 to 2015 average, a wet year example (2011), a dry year example (2012), and a critically dry year example (2014).

Table 3: Irrigation Deliveries

	2007-2015 Average Total Deliveries (acre feet)	Wet Year (2011) Total Deliveries (acre feet)	Dry Year (2012) Total Deliveries (acre feet)	Critical Year (2014) Total Deliveries (acre feet)
January	250	0	210	670
February	2,030	0	4,740	4,950
March	3,070	1,650	2,320	2,120
April	4,090	1,740	3,550	3,280
May	4,420	4,500	5,730	3,590
June	7,420	4,270	7,640	9,440
July	8,660	9,710	10,170	6,590
August	8,530	7,680	7,650	8,290
September	5,070	5,820	6,800	4,860
October	1,510	1,300	1,950	2,570
November	30	0	140	0
December	220	150	350	0
Total	45,300	36,820	51,250	46,360
Groundwater	33,170	12,170	42,060	38,240
Surface Water*	12,130	24,650	9,190	8,120

* Includes recirculated tailwater and subsurface drain water.

During dry periods, a much smaller volume of surface water is available, so LTMWC relies on groundwater to meet irrigation demands. Except for during wet periods, groundwater typically makes up more than 50% of the water supply.+

Irrigation Methods and Cropping.

Approximately 70% of the crops grown within LTMWC are field crops, most notably alfalfa, corn, cotton, and tomatoes, with the remainder of the Company's service area planted to permanent crops including pistachios, and almonds. Table 4 shows the 2015 crops.

TABLE 4: CROPPING PATTERN

CROP	2015 Planted Acres	% of Acres Planted
Alfalfa	4384	38%
Almonds	302	3%
Corn	81	<1%
Dbl Crop Corn	1245	11%
Cotton	578	5%
Pistachios	3108	27%
Tomatoes	1507	13%
Wheat	1528	13%
Fallow	86	<1%
Total:	12,819*	

*Includes double cropped acreage.

Approximately 58% of the cropped acreage within LTMWC is irrigated with conventional irrigation methods such as furrow or flood, with the remainder irrigated using high-efficiency irrigation methods including micro-sprinklers, surface drip, and subsurface drip. All of the pistachio, almond, and tomato acreage, as well as a portion of the other field crops, are irrigated with these high-efficiency system. LTMWC growers are expanding the use of high-efficiency drip field crop irrigation in 2016 and probably in future years.

It should be noted that LTMWC does not control what crops are planted or how they are irrigated. Those decisions are made by the growers based on a variety of factors, including international market demand, water supply, and crop rotation schedules.

B. Environmental Water Use

None of the Company's water supply is dedicated to recreational water use.

C. Recreational Water Use

None of the Company's water supply is dedicated to recreational water use.

D. Municipal and Industrial Use

None of the Company's water supply is dedicated to municipal or industrial water use.

E. Groundwater Recharge Use

In non-wet years, groundwater along with recycled drainage are the primary supply of irrigation water. In normal precipitation years when there are surface water supplies available from adjoining districts, the Company practices conjunctive use by purchasing surface water in lieu of pumping groundwater. In Wet years when flood waters are released through the Chowchilla-Eastside Bypass and below the Mendota Pool, the Company has the ability to divert significant amounts of water into the Company's distribution system for conjunctive usage in lieu of pumping groundwater.

A small amount of recharge occurs incidentally from the unlined canals operated by the Company. However, the majority of the Company's canals have been compacted and such recharge is generally insignificant.

F. Transfer and Exchange Use

Water transfers are not authorized from inside the Company service area to lands outside the Company service area. Growers are not allowed to transfer water individually from outside the service area to inside the company service area. Any transfer of water into the service area would be structured to benefit all users.

G. Other Water Use

There are no other water uses within LTMWC.

Section IV: Description of Quantity and Quality of the Water Resources of the Agricultural Water Supplier

A. Water Supply Quantity

The District's water supply consists primarily of groundwater pumped into the Company's delivery system, water from interceptor drains that is comingled with groundwater, and drainage water generated by those fields which still are irrigated by surface methods. In wet years the Company substitutes purchased surface water from adjoining districts and flood releases diverted from the Middle Eastside Bypass for pumped groundwater. Table 5 shows the 2011 to 2015 water deliveries from LTMWC including the groundwater and surface water components.

Table 5: Water Deliveries

Year	Surface Water	Groundwater	Total Supplies
2011	24,650	12,170	36,820
2012	9,190	42,060	51,250
2013	10,780	38,420	49,200
2014	8,120	38,240	46,360
2015	4,960	41,070	46,030

1. Surface Water Supply

LTMWC's surface water supplies consists of riparian rights to the San Joaquin River (subject to upstream rights), diversions of flood flows from the Middle Eastside Bypass, spills from upstream irrigators on the San Joaquin River, operating spills from Merced Irrigation District located east of LTMWC, and purchases of Sphere of Influence ("SOI") water from Merced Irrigation District. The Company is situated geographically that it could arrange water transfers delivered from adjoining districts in all 4 directions.

During wet years when flood releases occur in the San Joaquin River system and the Kings River system, the Eastside bypass diverts flows from the S.J. River, the Chowchilla River, Berenda and Ash Sloughs, and the Fresno River. These flows reach LTMWC at the confluence of the Eastside Bypass and the S.J. River on Washington Road in Merced County. Additionally, flood release flows on the Kings River system are diverted down the North Fork of the Kings River and pass into the S.J. River via Fresno Slough at Mendota Pool. These flows join the Eastside Bypass at Washington Road on the southern border of

LTMWC. The Company has a diversion structure below the Sand Slough Control structure in the S.J. River. In addition, flows in the Eastside Bypass, if sufficient, can gravity flow through control gates into existing canals of the Company that cross the Eastside Bypass North of Washington road and South of Chamberlain Road. In wet years, the amounts of surface water from these sources can be substantial.

In addition to flood flow diversions, in normal to wet years the Merced Irrigation District will make water available to SOI users, including LTMWC. The Merced Irrigation District has two canals in their El Nido division that drain into the LTMWC system from the East. In addition, in all years their operational spills in the two referenced canals also enter the LTMWC system where they are integrated into the irrigation system. All surface water sources are used in conjunctive recharge, as they replace groundwater pumping.

2. Groundwater Supply

LTMWC is located within the South West portion of the Merced Groundwater Sub-basin (MS) number 5-22.04 of the San Joaquin Valley Groundwater Basin, as detailed in the Department of Water Resources Bulletin 118, February 2004 Update.

In the western half of the MS is two aquifers: a shallow unconfined aquifer located from approximately 50 to 200 feet below ground surface, and a deep confined aquifer lying below the Corcoran Clay Hydraulic layer. Within the LTMWC the service area, the Corcoran clay extends down to approximately 180-240' depths. Soils above the Corcoran layer are mostly unconsolidated deposits of continental and older alluvium. Water from the unconfined aquifer can vary widely in quality. The confined aquifer is made up of unconsolidated deposits and consolidated deposits, including the Merhten formation, which is an important aquifer. Water quality in this aquifer is generally good.

Extending to the east, the shallow surface soils include an increased percentage of silty sand layers with increasing permeability. The deeper, relatively impermeable Corcoran Clay prevents any practical opportunity to directly recharge the lower aquifer below the Corcoran Clay.

LTMWC owns and operates 94 groundwater wells. The majority of the wells are drilled below the Corcoran Clay in the confined zone, and a lesser amount are drilled in the unconfined aquifer located above the Corcoran Clay layer. Wells are distributed throughout the Service area and are generally all of similar quality. The groundwater pumped from the wells into canals is able to be transported to all parts of the Service area.

In 1997, the Company signed an MOU with Turner Island Water District which is adjoining on the north of LTMWC to establish a coordinated Groundwater

Management Plan under the provisions of AB 3030 chaptered in 1992. A copy of this groundwater management plan is included in Appendix C.

The principle purposes of the Plan are to coordinate and preserve local management of the groundwater resources and document the long-standing groundwater management practices and programs of the local landowners. Many of the entities do not have groundwater wells but many do. The Plan focuses on conjunctive management of area surface water supplies and groundwater by the different water users to enhance the groundwater resources. There is an emphasis on on-farm management and the desire to effectively manage and improve water delivery efficiency and reduce the need for groundwater pumping when surface supplies are limited in dry years.

3. Other Water Supplies

None

4. Drainage From the Water Supplier's Service Area

LTMWC operates a closed system. All surface runoff (tailwater) is discharged back into the District's irrigation system to be reused as part of the irrigation supply.

Some areas of the District suffer from a shallow or perched water table that is managed with subsurface drainage systems (tiles). In some cases, these systems are owned and operated by the individual landowners, and in other cases by LTMWC. All of the systems discharge into a drainage collection system owned and operated by LTMWC.

B. Water Supply Quality and Water Quality Monitoring Practices

LTMWC periodically collects water samples at key groundwater supply points and has them analyzed for electrical conductivity, pH, TDS, total nitrogen, and boron. The purpose of this monitoring is to provide water users with a general idea of the irrigation water quality they will receive and to monitor for long term trends. Both the surface and groundwater quality supplying the District are very good and growers are not concerned with water quality impacts to their crops.

Groundwater Supply Quality

The District's groundwater supply comes from 94 District-owned wells. Table 6 shows the groundwater quality for wells at key locations within the District.

Table 6: Well Water Quality

Well	Season	Aquifer Penetration*	EC (ds/m)	TDS (mg/L)	pH	Total N (mg/L)	Boron (mg/L)
Well A	2010	Deep	0.52	398	8.3	8	0.05
Well B	2010	Deep	0.63	377	8	<2.0	0.02
Well C	2013	Shallow	2.71	1586	7.5	59	0.04
Well D	2013	Shallow	1.15	735	7.7	22	0.04
Well E	2015	Shallow	0.5	326	7.9	<2.0	0.04
Well F	2015	Shallow	1.15	620	7.1	21	0.03
Well G	2015	Deep	0.4	270	7.6	<2.0	0.05
Well H	2015	Deep	1.33	711	8	<2.0	0.08
Well I	2015	Deep	0.6	352	8	<2.0	0.06
Well J	2015	Deep	2.5	1354	7.6	<2.0	0.05

*Shallow indicates well perforations above the Corcoran clay. Deep indicates well perforations below the Corcoran clay

3. Other Water Supplies

There are no other water supplies distinctly monitored by LTMWC. As noted earlier, tailwater discharges are assimilated into the Company's water supply, however these water sources are not independently monitored.

4. Drainage From the Water Supplier's Service Area

Tailwater generated by irrigation operations is either recirculated by the landowner or discharged back into the District's water distribution system. LTMWC does not separately monitor tailwater discharges from water users into its conveyance system. Some regions within LTMWC have perched water table conditions that are managed by subsurface drainage systems (tile systems). Water produced by the tile systems (tile water) is high in Ec and nitrates, but generally is suitable for mixing in for recirculation.

Section V: Water Accounting and Water Supply Reliability

A. Quantifying the Water Supplier's Water Supplies

1. Agricultural Water Supplier Water Quantities: Agricultural water supplies (by source) are tabulated in Section III A (Tables 3 and 5). This summarizes all of the water supplied by the District to growers for irrigation. All of the water delivered by the Company is used for agricultural purposes.
2. Other Water Sources Quantities: Aside from the water supplies previously mentioned, other water sources include rainfall and flood waters. Table 7 tabulates the average rainfall and base evapotranspiration for Company.

Table 7: Average Monthly Precipitation and Evapotranspiration.

Month	Average Monthly Precipitation (inches)	Average Monthly ETo (inches)
January	2.05	1.27
February	1.98	1.97
March	1.43	3.67
April	0.80	4.98
May	0.47	6.99
June	0.14	7.96
July	0.03	8.46
August	0.01	7.66
September	0.05	5.63
October	0.52	3.59
November	0.87	1.77
December	1.88	1.09
Total:	10.23	55.04

Precipitation: Lone Tree Mutual Water Company Headquarters

ETo: CIMIS – Merced Station

As evident in Table 7, virtually all precipitation occurs outside of the typical growing season (April to September) resulting in virtually no usable effective precipitation¹.

¹ The exception to this would be for winter crops such as wheat, which would be partially irrigated through natural precipitation.

B. Quantification of Water Uses

All water used in LTMWC is for agricultural purposes. LTMWC growers apply water before the growing season in most years for pre-irrigation for certain crops. This practice provides some leaching and sufficient soil moisture for the germination of seeds. The remainder of water use goes to meet the crop consumptive use (ETc). Table 8 shows the typical breakdown between water uses.

Table 8: Water Demand

Practice	2011-15 Average	Wet Year (2011)	Critical Dry Year (2015)
<u>Demand</u>	(acre feet)	(acre feet)	(acre feet)
Pre-Irrigation (Estimated)	380	440	430
Consumptive Use	38,000	37,900	34,900
Total	38,380	38,340	35,330

Irrigation runoff (tailwater) is completely recaptured, either by the grower or by the District's irrigation system. In both cases, tailwater is recirculated as part of the irrigation supply, however it is not separately measured.

C. Overall Water Budget

Table 9 shows the water budget for the average (2011 to 2015) demand and supply.

Table 9: Water Demand and Supply.

Practice	2011-15 Average	Wet Year (2011)	Critical Dry Year (2015)
<u>Demand</u>	(acre feet)	(acre feet)	(acre feet)
Pre-Irrigation (Estimated)	380	440	430
Consumptive Use	38,000	37,900	34,900
Total Demand:	38,380	38,340	35,330
<u>Supplies</u>			
Groundwater	34,400	12,200	41,100
Surface & Recirculated Water	11,500	24,700	5,000
Total Supplies	45,900	36,900	46,100

D. Water Supply Reliability

The District's water supply is highly dependent on annual precipitation and runoff from the Sierra Nevada Mountains and, to a less extent, flood flows from the Kings and San Joaquin Rivers. In most years, groundwater makes up the majority of all water supplies. In periods of severe drought, water users will fallow ground that would be planted in other years to reduce overall water demand.

Section VI: Climate Change

The long-term impacts of climate change on the Company service area are not known. It is anticipated that climate change will result in wide variations in precipitation, contributing further to the poor reliability of the surface water supplies. LTMWC expects to rely on its groundwater supplies to help make up for surface water shortfalls. Improvements in irrigation efficiency will allow the grower's in the service area to produce field crops with less water in dry years. LTMWC growers also have the ability to fallow ground for annual crops, or deficit irrigate permanent crops to reduce water demand in periods of severe drought.

Section VII: Water Use Efficiency Information

A. Efficient Water Management Practice (EWMP) Implementation and Reporting

Table 11 provides a brief summary of the EWMPs that the Company has planned to implement. Details of each EWMP are provided after the table.

Table 11: Report of EWMPs Implemented/Planned (Water Code §10608.48(d), §10608.48 (e), and §10826 (e))		
EWMP No.*	Description of EWMP	Status of EWMPs
Critical EWMPs		
1	Water Measurement	Currently Implemented
2	Volume-Based Pricing	Currently Implemented
Conditionally Required EWMPs (locally cost-effective and technically feasible EWMPs)		
1	Alternate Land Use	Not Implemented – Infeasible.
2	Recycled Water Use	Not Implemented – Infeasible.
3	On-Farm Irrigation Capital Improvements	In Progress – Grower initiated.
4	Incentive Pricing Structure	Not Implemented – Not Planned.
5	Infrastructure Improvements	Not Implemented – Not Planned.
6	Order/Delivery Flexibility	Not Implemented – Infeasible.
7	Supplier Spill and Tailwater Systems	Implemented.
8	Conjunctive Use	Implemented.
9	Automated Canal Controls	Not Improvements - Not Planned.
10	Company Pump Test/Eval.	Implemented
11	Water Conservation Coordinator	Implemented
12	Water Management Services to Customers	Implemented – Grower initiated.
13	Identify Institutional Changes	Implemented
14	Supplier Pump Improved Efficiency	Implemented
Notes: *EWMP numbers correspond to (Water Code §10608.48(c))		

Critical Efficient Water Management Practices:

Critical EWMP 1 - Water Measurement: LTMWC measures 100% of its deliveries. Approximately 42% of the measurement points are flow meters on pump discharge manifolds or filter stations. The remaining 58% of the measurement points are gravity deliveries where the flow rate is calculated using University of California methods. Flow meters are certified by the manufacturer to be accurate within 5%. Meters are repaired or replaced as needed and LTMWC will refuse to deliver water to any grower with a broken or improperly installed meter.

Critical EWMP 2 – Volume-based Pricing: LTMWC utilizes volume-based pricing. Company water users are billed according to the volume of water delivered. The volume of delivered water is measured by factory-certified, totalizing meters which are read daily by Company staff when a grower's system is in use, and non-metered deliveries are measured by the staff on a daily basis and converted to volumetric quantities by the methods previously described and detailed in Appendix D.

Conditional Efficient Water Management Practices:

EWMP 1 – Alternate Land Use: This EWMP is not applicable. There are no lands in the Company service area where irrigation and farming activities contribute to significant drainage problems.

EWMP 2 – Recycled Water Use: This EWMP is not applicable. There is no waste water in the area available to the Company. LTMWC does not currently have an opportunity to assimilate recycled water into its irrigation supply.

EWMP 3 – On-Farm Irrigation Capital Improvements: This EWMP is implemented by LTMWC growers. Approximately 42% of the service area is irrigated using high efficiency irrigation systems such as buried drip or micro-sprinklers. Growers are aware of the benefits of pressurized irrigation systems and are converting from conventional surface methods as the crop rotation and budget allow. LTMWC does not have a financial incentive program to assist growers with irrigation system improvements and all irrigation improvements are funded and implemented by the growers. However, existing grower projects are expected to expand the percentage of acreage irrigated by high efficiency systems to 60% by 2018, and recent conversion trends indicate a steady increase in the acreage irrigated with high efficiency irrigation system that LTMWC expects to see 80% of the Service area acreage irrigated with such systems by 2020.

EWMP 4 – Incentive Pricing Structure: The Company sets the price of water based on actual costs (including operations, maintenance, administration, and purchased water), some of which are fixed regardless of the available water supply. To that end, the price of water becomes proportional to the available volume of water. In drought years, a lower (or absent) surface water supply will result in a significantly higher unit price of water, which does create an incentive to adjust cropping patterns and reduce water demand.

EWMP 5 – Infrastructure Improvements: This EWMP is not planned. The existing water delivery infrastructure is sufficient to meet the Company’s needs. Because the general topography within the Company is flat, any significant infrastructure improvements (such as canal lining or piping) would be cost prohibitive and provide minimal benefits.

EWMP 6 – Order/Delivery Flexibility: This EWMP is not technically or financially feasible. The nature of the Company’s delivery system as well as the general topography of the area dictates the operation and order of delivery system. Conversion to an “on-demand” system would require the entire system to be replaced with a pressurized delivery system at a cost well beyond the District’s resources.

EWMP 7 – Supplier Spill and Tailwater Systems: This EWMP has been implemented. LTMWC does not generate any operation spills. All tailwater generated within the Company service area is either recirculated by the individual water user or discharged back into the Company’s irrigation system for reuse as irrigation water. The volume of recirculated tailwater is not separately measured.

EWMP 8 – Conjunctive Use: This EWMP has been implemented. LTMWC operates as a conjunctive use district by using flood release water in lieu of groundwater when such flows are available.

EWMP 9 – Automated Canal Controls: This EWMP is not being implemented by LTMWC. The existing canals are designed so that operational spills return to drains for collection and re-usage along with tailwater. Canal automation would not have a significant benefit.

EWMP 10 – Customer Pump Evaluations: This EWMP has been implemented by the growers. Growers within LTMWC understand the need to maintain efficient pumps and will schedule pump tests on an as needed basis to evaluate efficiency and make repairs. LTMWC water users have not asked the Company to participate in this process.

EWMP 11 – Water Conservation Coordinator: This EWMP has been implemented by LTMWC. The Company’s Rules and Regulations prohibit waste of water and the Company has appointed the General Manger as the Water Conservation Coordinator. High efficiency irrigation systems are precise in water application. Tailwater drainage is recycled within the system by the Company. Growers pay volumetrically for all water used, and are motivated to complete irrigations quickly and efficiently so as to have sufficient water for all of their crops.

EWMP 12 – Water Management Services to Customers: This EWMP has been implemented by LTMWC growers. The majority of water users within LTMWC employ agronomists and other water management professionals directly. LTMWC water users have not asked the Company to participate in this process.

EWMP 13 – Identify Institutional Changes: This EWMP has been implemented. LTMWC holds monthly board meetings where water users can present concerns regarding Company policies. At this time LTMWC has not received any complaints or concerns from water users regarding its policies.

EWMP 14 – Supplier Pump Improved Efficiency: This EWMP has been implemented. LTMWC participates in PG&E’s Advanced Pumping Efficiency Program (APEP) and regularly evaluates all of its pumps.

Schedule and Budget to Implement EWMPs.

The Company or its water users have already implemented many of the listed EWMPs. Other EWMPs, particularly those related to infrastructure improvements, are currently in the process of being evaluated and a detailed schedule or budget has not yet been developed.

Table 12: Schedule to Implement EWMPs

(Water Code §10608.56 (d))

EWMP	Implementation Schedule	Finance Plan	Budget Allotment
Critical			
1 – Water Measurement	Complete	Grower Financed	\$0
2 - Volume-Based Pricing	Complete		\$0
Conditional			
1 – Alternate Land Use	Not Applicable		
2 – Recycled Water Use	Not Applicable		
3 – On-Farm Irrigation Capital Improvements	In-progress: Grower Driven	Grower Financed	\$0
4 – Incentive Pricing Structure	Not Planned		
5 – Infrastructure Improvements	Not Planned	Not yet determined	Not yet determined
6 – Order/Delivery Flexibility	Not Planned		
7 – Supplier Spill and Tailwater Systems	Implemented	None	\$0
8 – Conjunctive Use	Implemented		\$0
9 – Automated Canal Controls	Not Planned		
10 – Customer Pump Test/Eval.	Grower Implemented	Grower Financed	\$0
11 – Water Conservation Coordinator	Implemented	\$0	\$0
12 – Water Management Services to Customers	Grower Implemented	Grower Financed	
13 – Identify Institutional Changes	Implemented	\$0	\$0
14 – Supplier Pump Improved Efficiency	Implemented	Included in Annual Maintenance Budget	
Total all EWMPs			

Section VIII: Supporting Documentation

Agricultural Water Measurement Regulation Documentation (as applicable)

A. Legal Certification and Apportionment Required for Water Measurement

LTMWC has access to all measuring points. No Legal Certification is required.

B. Engineer Certification and Apportionment Required for Water Measurement

LTMWC measures all deliveries volumetrically. No Engineer Certification is required.

C. Description of Water Measurement Best Professional Practices

Included in Appendix D.

D. Documentation of Water Measurement Conversion to Volume

Not applicable – all deliveries are metered volumetrically.

E. Device Corrective Action Plan Required for Water Measurement

See Appendix D.

Other Documents (as applicable)

No other documents are required.

Appendix A: Preparation and Adoption Documents

Notice of Preparation

Resolution of Adoption

LONE TREE MUTUAL WATER COMPANY

5002 W. El Nido Road
El Nido, CA 95317
Telephone (209) 722-3997
Facsimile (209) 722-0373
E-mail: lonetreh2o@gmail.com

April 8, 2016

Mr. Reggie Hill
Secretary-Manager
Lower San Joaquin Levee District
11704 W Henry Miller Avenue
Dos Palos, CA 93635

SUBJECT: Notice of Preparation of an Agricultural Water Management Plan by Lone Tree Mutual Water Company.

Dear Reggie,

This letter is being sent to inform you that Lone Tree Mutual Water Company is preparing an Agricultural Water Management Plan (AWMP) in accordance with California Water Code. Should you have any concerns or wish to provide input, please submit those in writing to the Company by May 18, 2016. A public hearing for comments on the AWMP will be held during the June Board of Directors Meeting on June 15, 2016.

Very truly yours,



George Park
Manager

LONE TREE MUTUAL WATER COMPANY

5002 W. El Nido Road
El Nido, CA 95317
Telephone (209) 722-3997
Facsimile (209) 722-0373
E-mail: lonetreh2o@gmail.com

April 8, 2016

Mr. John Sweigard
Merced Irrigation District
744 West 20th Street
Merced, CA 93540

SUBJECT: Notice of Preparation of an Agricultural Water Management Plan by Lone Tree Mutual Water Company.

Dear John,

This letter is being sent to inform you that Lone Tree Mutual Water Company is preparing an Agricultural Water Management Plan (AWMP) in accordance with California Water Code. Should you have any concerns or wish to provide input, please submit those in writing to the Company by May 18, 2016. A public hearing for comments on the AWMP will be held during the June Board of Directors Meeting on June 15, 2016.

Very truly yours,



George Park
Manager

LONE TREE MUTUAL WATER COMPANY

5002 W. El Nido Road
El Nido, CA 95317
Telephone (209) 722-3997
Facsimile (209) 722-0373
E-mail: lonetreh2o@gmail.com

April 8, 2016

Mr. Chase Hurley
San Luis Canal Company
11704 W Henry Miller Avenue
Dos Palos, CA 93620

SUBJECT: Notice of Preparation of an Agricultural Water Management Plan by Lone Tree Mutual Water Company.

Dear Chase,

This letter is being sent to inform you that Lone Tree Mutual Water Company is preparing an Agricultural Water Management Plan (AWMP) in accordance with California Water Code. Should you have any concerns or wish to provide input, please submit those in writing to the Company by May 18, 2016. A public hearing for comments on the AWMP will be held during the June Board of Directors Meeting on June 15, 2016.

Very truly yours,



George Park
Manager

LONE TREE MUTUAL WATER COMPANY

5002 W. El Nido Road
El Nido, CA 95317
Telephone (209) 722-3997
Facsimile (209) 722-0373
E-mail: lonetreh2o@gmail.com

April 8, 2016

Mr. Scott Skinner
Turner Island Water District
1269 West I Street
Los Banos, CA 93635

SUBJECT: Notice of Preparation of an Agricultural Water Management Plan by Lone Tree Mutual Water Company.

Dear Scott,

This letter is being sent to inform you that Lone Tree Mutual Water Company is preparing an Agricultural Water Management Plan (AWMP) in accordance with California Water Code. Should you have any concerns or wish to provide input, please submit those in writing to the Company by May 18, 2016. A public hearing for comments on the AWMP will be held during the June Board of Directors Meeting on June 15, 2016.

Very truly yours,



George Park
Manager

LONE TREE MUTUAL WATER COMPANY

5002 W. El Nido Road
El Nido, CA 95317
Telephone (209) 722-3997
Facsimile (209) 722-0373
E-mail: lonetreh2o@gmail.com

April 8, 2016

Mr. Jim Brown
County Executive Officer
County of Merced
2222 M Street
Merced, CA 93540

SUBJECT: Notice of Preparation of an Agricultural Water Management Plan by Lone Tree Mutual Water Company.

Dear Jim,

This letter is being sent to inform you that Lone Tree Mutual Water Company is preparing an Agricultural Water Management Plan (AWMP) in accordance with California Water Code. Should you have any concerns or wish to provide input, please submit those in writing to the Company by May 18, 2016. A public hearing for comments on the AWMP will be held during the June Board of Directors Meeting on June 15, 2016.

Very truly yours,



George Park
Manager

LONE TREE MUTUAL WATER COMPANY

5002 W. El Nido Road
El Nido, CA 95317
Telephone (209) 722-3997
Facsimile (209) 722-0373
E-mail: lonetreh2o@gmail.com

April 8, 2016

Mr. Chris White
Central California Irrigation District
1335 West I Street
Los Banos, CA 93635

SUBJECT: Notice of Preparation of an Agricultural Water Management Plan by Lone Tree Mutual Water Company.

Dear Chris,

This letter is being sent to inform you that Lone Tree Mutual Water Company is preparing an Agricultural Water Management Plan (AWMP) in accordance with California Water Code. Should you have any concerns or wish to provide input, please submit those in writing to the Company by May 18, 2016. A public hearing for comments on the AWMP will be held during the June Board of Directors Meeting on June 15, 2016.

Very truly yours,



George Park
Manager

JUNE 22, 2016
RESOLUTION NO. 2016-02

**RESOLUTION OF THE BOARD OF DIRECTORS,
LONE TREE MUTUAL WATER COMPANY
ADOPTING AGRICULTURAL WATER MANAGEMENT PLAN**

RESOLVED, by the Board of Directors (the "Board") of the Lone Tree Mutual Water Company ("LTMWC"), at a regular meeting duly called and held on June 22, 2016, at the business office of LTMWC, 5002 West El Nido Road, El Nido, CA 95317, as follows:

WHEREAS, the California Agricultural Water Management Planning Act of 2009, Water Code § 10800, *et seq.* (the "Act"), requires certain agricultural suppliers to develop and adopt an agricultural water management plan; and

WHEREAS, pursuant to the Act, LTMWC staff prepared the Lone Tree Mutual Water Company Agricultural Water Management Plan (the "LTMWC AWMP"), which was made available for public inspection; and

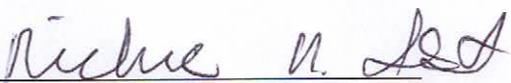
WHEREAS, LTMWC conducted a public hearing on the LTMWC AWMP on June 22, 2016, for which "equivalent notice" was provided pursuant to Section 10841 of the Water Code by, *inter alia*, directly notifying all LTMWC shareholders, with receipt acknowledged, and publishing notice in a newspaper of general circulation; and

WHEREAS, LTMWC received no oral or written comments on the LTMWC AWMP from any person at or prior to the June 22, 2016, public hearing.

NOW, THEREFORE, BE IT RESOLVED, that the Board of Directors of the Lone Tree Mutual Water Company do order as follows:

1. The Board hereby adopts the LTMWC AWMP as presented and prepared in accordance with Section 10841, *et seq.*, of the Water Code; and
2. The General Manager of LTMWC or his designee shall submit copies of the LTMWC AWMP, no later than 30 days from this date, to the various agencies and entities specified in Sections 10843 and 10844 of the Water Code, including the Department of Water Resources; and
3. The Board authorizes the General Manager to take all actions necessary to implement the LTMWC AWMP as provided therein.

THE FOREGOING RESOLUTION WAS DULY AND REGULARLY ADOPTED by the Board of Directors of the Lone Tree Mutual Water Company, at a regular meeting of the Board held on the 22nd day of June, 2016, by the following vote:

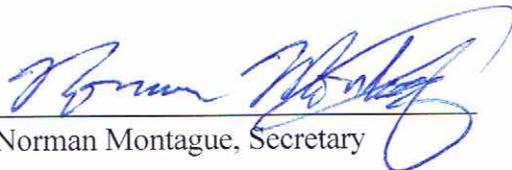


Richie Iest, President

ATTEST:

I, Norman Montague, Secretary of Lone Tree Mutual Water Company, do hereby certify that the foregoing resolution No. 2016-02 was duly adopted and passed by the Board of Directors of Lone Tree Mutual Water Company at a regular meeting of said Board, held at 5002 West El Nido Road, El Nido, CA 95317 on the 22nd day of June, 2016, by the following vote:

AYES: Directors Iest, Elkins, Montague
NOES: N/A
ABSENT: Directors Seaman, Silva
ABSTAIN: N/A


Norman Montague, Secretary

**Appendix B: Second Amended Rules and Regulations
of the Lone Tree Mutual Water Company**

**RULES AND REGULATIONS
OF
LONE TREE MUTUAL WATER COMPANY**

Governing the Distribution and Use of Water

**Adopted by the Board of Directors of the Lone Tree
Mutual Water Company at the Regular Meeting held on
December 20, 1990**

**Amended by the Board of Directors of the Lone Tree
Mutual Water Company at the Regular Meeting held on
October 25, 1994**

The Lone Tree Mutual Water Company (hereinafter "the COMPANY") is a Corporation, organized and existing under and by virtue of the laws of the State of California. It is a Mutual Water Company governed by a Board of Directors (hereinafter "the Board") elected by the Shareholders. It makes no profit and is operated for the sole benefit of the lands within its boundaries. The benefits the Shareholders can derive from the COMPANY will be enhanced by the extent to which they cooperate to make it a success.

These Rules and Regulations are intended to be consistent with the laws of California (and are to be so construed) and have been adopted by the Board pursuant to the COMPANY'S Articles of Incorporation and Bylaws to effect orderly and efficient distribution and use of the COMPANY'S water supply; to effect adequate and uniform surface drainage of the lands within the boundaries of the COMPANY; to cooperate to the extent determined to be proper, at the absolute discretion of the Board, with land owners within the boundaries of the COMPANY in reducing high ground water tables; to define the responsibilities of the Shareholders in the use of the COMPANY'S rights-of-ways and/or other properties; and to govern the collection of the charges and expenses incident to the COMPANY'S business.

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Rule 1

MANAGEMENT

The business of the COMPANY is controlled by the Board as provided by the Bylaws.

The COMPANY shall employ such personnel as may be required and authorized by the Board for the operation, maintenance, and improvement of the system.

It is the policy of the COMPANY and the Board that the general management of its business, including the employment of personnel, shall be delegated to the COMPANY'S manager.

Rule 2

CONTROL OF WORKS

All diversion works, canals, ditches, headgates, drains, siphons, spillways, wells, pumping plants, and other structures belonging to the COMPANY or to which the COMPANY has accepted the grant of an easement will be operated and maintained by the COMPANY, and their control and operation will be under the exclusive control of the COMPANY. In no event, however, will the COMPANY provide and/or maintain turnouts at its expense in canals that are not controlled by the COMPANY.

Each Shareholder shall be responsible for keeping the tailwater pipes which serve his lands in an open condition, and shall pay for the cost of a new pipe and its installation whenever a new tailwater pipe is needed or an existing tailwater pipe fails or is damaged by the landowner and must be replaced, at the sole discretion of the COMPANY.

Rule 3

PRIVATE DITCHES, DRAINS/PIPELINES AND CEMENT DITCHES

The term "private ditches, drains/pipelines and cement ditches", as used in these Rules and Regulations, means those privately owned ditches, drains or pipelines, cement ditches and appurtenant structures within the service area of the COMPANY. Except as herein provided with regard to such private ditches and drains to which the COMPANY holds easements, the operation and maintenance of private ditches, drains or pipelines and cement ditches shall be the sole responsibility of the Shareholder who uses them.

All private ditches, drains or pipelines and cement ditches to which the COMPANY holds easements shall be under the exclusive control of the COMPANY to the same extent as if they were owned in fee. It is emphasized that the COMPANY will only maintain and operate such ditches and other facilities to which easements have been deeded, granted, accepted, and recorded. Before the COMPANY will accept a deed or easement, the private ditches, drains or pipelines, and cement ditches involved must comply with any engineering standards and specifications established by the COMPANY, and must be contiguous to property on which the COMPANY holds a deed or easement upstream, in the case of an irrigation ditch, and downstream, in the case of a drain except at the edges of the service area. Notwithstanding any of the foregoing, the COMPANY is not responsible for the maintenance of the private ditches, drains/pipelines and cement ditches in any distribution or drainage system that the COMPANY does not control or to which easements have not been deeded or granted, accepted, and recorded.

Rule 4

TAMPERING AND DAMAGE TO COMPANY FACILITIES

Manipulation of COMPANY weirs, headgates, pumping plants, and other structures is forbidden, unless permission is given by the ditch tender or other authorized employee of the COMPANY. Cutting canal, drain or ditch banks and/or placing dams or other obstructions in COMPANY canals or drains is prohibited.

Removal of earth from, or other use, of COMPANY-owned property or easements, such as the placing of toe ditches, drainage ditches, fences, trees, pumping plants, structures or other obstructions upon the COMPANY'S easements is also prohibited unless done with permission of the COMPANY.

Shareholders shall not permit their livestock to feed or trespass upon COMPANY canals and drains, or upon private ditches and drains upon which the COMPANY has an easement, except with specific permission of the COMPANY. To assure that livestock will not trespass on said easements, Shareholders will construct and maintain in good repair fences along said easements as determined to be necessary by the COMPANY. In cases where it is necessary to cross the easement or to move livestock from one point to another along COMPANY easements, permission to use the easement for that purpose must be obtained from the COMPANY in advance. Any damage done to canal, ditch or drain banks by Shareholders in using them for a roadway, whether moving livestock, farming equipment or other vehicles, shall be the responsibility of those making such use of the property. If it is found necessary for the COMPANY to repair such damage, those responsible therefor shall pay all cost of

such repairs and in addition thereto, shall reimburse the COMPANY for its cost of litigation in such eventuality.

Any damage, in the opinion of the COMPANY, to a canal, ditch, drain, or well, because of carelessness or neglect by a Shareholder shall be repaired. The COMPANY shall have the right to make such repairs and if made by the COMPANY, the cost of the repairs will be billed to the Shareholder.

Rule 5

LIABILITY FOR DAMAGE

The COMPANY will not be liable for any damage caused by the negligence or carelessness of any Shareholder in the use of water or for failure on his part to maintain any ditch or structure therein for which he is responsible, either wholly or in part.

Rule 6

TRESPASS ON COMPANY PROPERTY

Any Shareholder or any other individual entering upon COMPANY property including easements does so at his own risk.

Rule 7

NOTIFICATION OF PROJECTED WATER REQUIREMENTS

Shareholders must file a proposed crop plan in the office of the COMPANY each year prior to January 1st. The proposed crop plans must describe the fields to be

irrigated with the acreage of respective crops in each field, the proposed water requirements for each irrigated crop, which fields will be left fallow or will grow crops not requiring irrigation. Changes made to the crop plan after January 1 must be communicated to Lone Tree Mutual Water Company.

Although the COMPANY will endeavor to notify Shareholders if the aggregate cropping plans would result in an inadequate supply of water, the COMPANY is under no obligation to provide such notice.

The COMPANY reserves the right to request periodic irrigation schedules from Shareholders to aid the COMPANY in scheduling and balancing water demand.

Rule 8

ALLOCATION OF WATER

1. Entitlement

a. The entitlement of water of each owner of the capital share of the COMPANY shall be that proportion of the total water available on a daily basis to the COMPANY from all sources, excepting domestic water supplies, that the shares owned by the owner bears to the total number of shares of stock issued and outstanding, and any Shareholder owning more than one parcel of land in the COMPANY service area may use the full entitlement of water on such of said parcels as the owner may desire, subject to a like right in all other Shareholders, and provided that the canal or canals, culverts, lift pumps, and other conveyance structures used in transporting said water have the necessary carrying capacity.

2. Limitations

a. The COMPANY reserves the right to suspend service during any period of time when it is necessary to take water out of the canals for cleaning or other maintenance, repair, or reconstruction work required.

b. The Board may:

(1) Set a periodic allocation of entitlement to water which shall be based on the prorata share of each Shareholder of the COMPANY, which allocation may be modified from time to time during the year as conditions warrant;

(2) Provide for a measured rate for water deliveries by the COMPANY; and

(3) Arrange for emergency delivery of water outside the service area of the COMPANY consistent with the provisions of all applicable laws.

c. In the event that the aggregate demand for water in a day exceeds the amount of water available from all sources, the grower will receive the lesser of:

(1) The individual amount requested; or

(2) The prorata share of the available water provided that all Shareholders will suspend water usage for purposes other than producing crops and providing that the grower has not already used their periodic entitlement as described in Paragraph b(1) above.

Rule 9

METHOD OF DELIVERY

All requests for water service must be made to the COMPANY office at least 48 hours before water is required. Water users must be prepared to handle water at the time it is ordered to be turned out at the delivery point specified. Water may be delivered upon shorter notice when water is available. All shutoff orders must be in the COMPANY office not later than twenty-four (24) hours before shutoff is desired.

Shareholders will be required to use water continuously day and night until irrigation is completed and without waste at any time.

Heads of water delivered may be altered by the COMPANY when necessary.

Rule 10

WASTE OF WATER

Shareholders wasting water, either willfully, carelessly, or on account of defective or inadequate ditches, levees, or structures, or on account of inadequate preparation of land for irrigation, or by allowing water delivered to land in the COMPANY service area to be used on land not within the service area, may be refused further service until such conditions are remedied.

Rule 11

POINT OF DELIVERY

All deliveries of water shall be made at the point where the Shareholder's private ditch connects with the canal or ditch or pumping plant owned or controlled by the COMPANY.

Rule 12

MEASUREMENT OF WATER

All measurements of water will be performed by COMPANY personnel using the method approved in advance by the Board and considered the most practical for each specific field or group of fields. A list of laterals and sublaterals identified for specific fields is available from the COMPANY.

Any disputes regarding the water measurement in a specific field or group of fields must be addressed to the general manager by the Shareholder or authorized agent within 7 days of receiving the notification of usage being disputed.

Rule 13

UNAUTHORIZED TAKING OF WATER

Persons interfering with the regulation of water in canals or ditches of the COMPANY are liable to criminal prosecution. If any person takes water without permission of the authorized agents of the COMPANY, he shall not only be subject to criminal prosecution, but may, at the option of the COMPANY, be subject to forfeiture of his right to water on the next rotation or regular run of water.

Rule 14

OWNERSHIP OF WATER

All water in COMPANY canals, drains, or ditches, regardless of source, except privately owned well water being transported therein by permission of the COMPANY, is COMPANY water and is subject to diversion and use by the COMPANY for the benefit of its Shareholders.

Rule 15

ACCESS TO LAND

The authorized agents or employees of the COMPANY shall have free access at all times to all lands irrigated from the COMPANY system for the purpose of examining any ditches, laterals, or drains serving such lands and/or the flow of water therein, for the purpose of ascertaining the acreage of crops on lands irrigated or to be irrigated, or for any other COMPANY purpose.

Rule 16

NUISANCES

No materials or substance of any nature, and particularly those that are or may become offensive to the senses or injurious to health or which do or may injuriously affect the quality of water, obstruct the flow of water, or result in the scattering of seeds or noxious weeds, plants, or grasses, shall be placed or dumped in any ditch or on any right-of-way of the COMPANY, or be placed or left so as to roll, slide, flow, or be washed or blown into any ditch or on any right-of-way. This provision is not meant

to preclude the COMPANY from normal canal maintenance (e.g. weed and algae control within the canals). Any violation of this rule will subject the offender to criminal prosecution. All employees of the COMPANY shall promptly report any violation of this rule, and the Shareholders of the COMPANY are especially urged to cooperate in its enforcement.

Rule 17

STOCK WATER

The COMPANY shall not be required to furnish water for the exclusive purpose of watering stock.

Rule 18

COMPLAINTS OF SHAREHOLDERS

Complaints of any kind against the COMPANY or any of its personnel should be made in writing to the Management of the COMPANY promptly after the acts complained of have occurred.

Shareholders and/or their tenants shall have the right to refer any complaints in writing or in person to the Board.

Rule 19

CHARGES FOR OPERATION AND MAINTENANCE OF SYSTEM

1. The cost of maintenance and/or operation of the irrigation and drainage systems controlled, owned, or to be owned, by the COMPANY, as well as the cost of

such betterments and/or extensions as may be necessary to provide an adequate and uniform distribution of water to all Shareholders, and to provide adequate and uniform drainage to the lands within the boundaries of this COMPANY, shall be borne, 1) by all the Shareholders in the proportion that the number of shares owned by each of them bears to the total number of shares issued by the COMPANY; or 2) in any other manner as provided for in the bylaws. The obligation to pay said costs and/or charges shall run with and bind the land described in the stock certificates, and any charges made or assessments levied shall be and constitute a lien on said land. Shareholders must pay the above charges even though they do not desire or receive water.

2. The secretary, or such other person as may be designated by the Board, shall, at times to be fixed by the Board, collect from each Shareholder any sums of money which may be due pursuant to the provisions of the foregoing paragraph, or at the discretion of the Board. Assessments may be levied in the manner provided by law to cover or defray such items of expense as may be necessary or proper for the COMPANY to incur.

3. Agreements may be entered into by the COMPANY and a Shareholder for the construction, reconstruction, or maintenance of the Shareholder's private drains, ditches, and structures by the COMPANY'S employees and equipment or for the leasing by the Shareholder of certain COMPANY equipment for any purpose. Any charges to the Shareholder for such work or equipment rental shall be subject to the provisions of subparagraph 4 next below.

4. All service charges or bills rendered by the COMPANY must be promptly paid, and any Shareholder who fails for a period of thirty (30) days to pay any lawful

charge or bills rendered by the COMPANY after the same has been rendered or demanded, shall not be entitled to demand or receive water or service of any kind from the COMPANY. Assessments and/or water charges which become delinquent will bear interest from the date they become delinquent till the date of payment at the annual rate of interest last set by the Board of Directors by resolution prior to the date of delinquency of the particular water charge or assessment, which rate will not exceed the maximum rate of interest allowed by law. Any assessment or water charge remaining delinquent for a period of ten (10) days shall also be subject to a late payment charge equal to five percent (5%) of the delinquent amount or twenty-five dollars (\$25.00), whichever is greater. Nevertheless, if such assessments or water charges including penalties remains delinquent and unpaid, the COMPANY may exercise such remedies as authorized in the bylaws to collect the delinquent charges.

Rule 20

LOST CERTIFICATE

Shareholders shall pay a service charge of ten dollars (\$10.00) for each certificate of stock for transfer or for replacement of certificates which may have been lost, stolen, destroyed, or otherwise disappeared. In addition, Shareholders may be required to complete an indemnity certificate when replacing lost certificates.

Rule 21

GRANT OF AGENCY

Any Shareholder may authorize a third party to request water deliveries, approve deliveries, measurements, or billings, and/or to receive billings and other communications from the COMPANY on behalf of such Shareholder. Any such authorization shall be in writing to the COMPANY, signed by the Shareholder, and shall provide a specific address, telephone number and contact person. The COMPANY shall be entitled to rely on such authorization without investigation; provided, however, that such authorization shall not relieve the Shareholder of liability for payment of periodic water billings or any other responsibilities of such Shareholder, and shall not transfer liability for such matters to the authorized party.

Rule 22

PENALTY FOR NON-COMPLIANCE

Refusal to comply with the requirements hereof, or transgression of any of the foregoing rules and regulations, or any interference with the discharge of duties of any employee of the COMPANY, shall be sufficient cause for terminating delivery of water to the offending party, and water will not again be furnished until full compliance, in the opinion of the Management of the COMPANY, has been made with all requirements hereof.

Rule 23

CHANGES IN RULES AND REGULATIONS

The Board reserves the right to change these Rules and Regulations by majority action of the Board at any regular or special meeting by adopting an appropriate resolution and incorporating such resolution into the minutes of the COMPANY. Publication and dissemination of such changes by the printing of revised Rules and Regulations will be limited to economically feasible intervals as determined by the Board.

There shall be maintained at the office of the COMPANY, however, a current looseleaf master copy of these Rules and Regulations, incorporating all changes made by the Board, which copy will be open to inspection at any time during office hours of the COMPANY.

Rule 24

RULES VS BYLAWS

In the event that a conflict exists between these Rules and Regulations and the Bylaws as amended from time to time, the Bylaws shall take precedence, and these Rules and Regulations shall be construed so as to be consistent with the Bylaws.

SECTION 592 - PENAL CODE OF THE STATE OF CALIFORNIA

"Every person who shall, without authority of the owner or managing agent, and with intent to defraud, take water from any canal, ditch, flume or reservoir used for the purpose of holding or conveying water for manufacturing, agriculture, mining,

irrigating or generation of power, or domestic use, or who shall without like authority, raise, lower, or otherwise disturb any gate or other apparatus thereof, used for the control or measurement of water, or shall empty or place, or cause to be emptied or placed, into any such canal, ditch, flume or reservoir, any rubbish, filth, or obstruction to the free flow of the water, is guilty of a misdemeanor."

CERTIFICATION OF SECRETARY

I, the undersigned, do hereby ratify:

1. That I am the duly elected and acting Secretary of LONE TREE MUTUAL WATER COMPANY, a California corporation; and

2. That the foregoing Rules and Regulations comprised of seventeen pages constitute a true and correct copy of the Rules and Regulations including all amendments thereto adopted by the Board of Directors of LONE TREE MUTUAL WATER COMPANY thru October 25, 1994.

IN WITNESS WHEREOF, I have hereunto subscribed my name and affixed the seal of said Corporation this 25th day of October, 1994.

Keith Abercrombie

Secretary

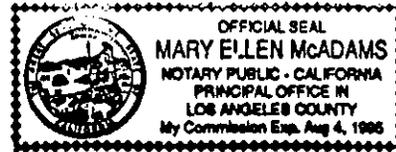
(General Acknowledgment)

STATE OF CALIFORNIA }

SS.

COUNTY OF Los Angeles }

On October 25, 1994 before me, Mary Ellen McAdams, a Notary Public in and for said State, personally appeared Keith Abercrombie, personally known to me (or proved to me on the basis of satisfactory evidence) to be the person(s) whose name(s) is/are subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their authorized capacity(ies), and that by his/her/their signature(s) on the instrument the person(s), or the entity upon behalf of which the person(s) acted, executed the instrument.



(This area for official notarial seal)

WITNESS my hand and official seal.

Signature Mary Ellen McAdams

Appendix C: Groundwater Management Plan

MEMORANDUM OF UNDERSTANDING
REGARDING GROUNDWATER MANAGEMENT

This Memorandum of Understanding ("MOU") is made and effective as of January 14, 1997 by and between the Turner Island Water District, a California water district ("District") and Lone Tree Mutual Water Company, a California non-profit mutual benefit corporation ("Lone Tree"), and is made with reference to the following facts:

A. The District is organized pursuant to Division 13 of the California Water Code and provides agricultural water service to landowners within its service area. Lone Tree is a California mutual water company and provides agricultural water service to its shareholders for use on lands within its service area.

B. The territorial boundaries of the District and Lone Tree's service area are adjoining. The District and Lone Tree overlie a common groundwater basin (the "Basin"), which is the Merced Basin as identified in Department of Water Resources Bulletin 118-80.

C. In 1992 the California Legislature enacted Part 2.75 of Division 6 of the California Water Code, which allows certain public agencies to adopt and implement groundwater management plans to manage and protect the groundwater resources within an agency's boundaries ("AB 3030"). Under AB 3030, the District is authorized to prepare and adopt a groundwater management plan. AB 3030 also authorizes the District to enter into memoranda of understanding with private parties, such as Lone Tree, for the purpose of implementing or coordinating groundwater management activities.

D. The District has adopted a resolution of intention to prepare a groundwater management plan pursuant to AB 3030. To preserve and protect their common groundwater source in the Basin, the District and Lone Tree wish to enter into this MOU in order to coordinate their groundwater management activities, and in order for Lone Tree's service area to be covered by the District's groundwater management plan adopted under AB 3030.

THEREFORE, the parties agree as follows:

1. The purpose of this MOU is to allow the District and Lone Tree to monitor groundwater supplies and promote groundwater management of the Basin in an economic and efficient manner.
2. The District will prepare a draft groundwater management plan to address the management and preservation of the groundwater resources of the Basin within the boundaries of Lone Tree and the District (the "Plan"). Upon approval of the Plan by Lone Tree's board of directors and adoption of the Plan by the District pursuant to AB 3030, the lands within Lone Tree's

service area, as well as the lands within the District's boundaries, will be governed by the Plan.

3. At all times, the District and Lone Tree will cooperate with each other in the development of the Plan so that the Plan will address the needs of both the District and Lone Tree. The District will keep Lone Tree informed regarding the progress on the Plan and any California Environmental Quality Act documentation prepared in relation thereto. The District will not adopt the Plan in a form which includes lands within Lone Tree's service area without the consent of Lone Tree.

4. All costs reasonably incurred by Lone Tree and the District associated with the preparation and adoption of the Plan and this MOU (the "Shared Costs") shall be shared equally by the parties. The Shared Costs shall not include costs incurred by either party for internal review of the Plan and this MOU. Within 30 days after the later to occur of (i) the District's adoption of the Plan or (ii) the execution of this MOU by both parties, each party shall provide the other with an itemized statement of such party's Shared Costs. If either party objects to the other's Shared Costs, such objection shall be described in writing and provided to the other party within 30 days after receipt of the other party's statement of Shared Costs. If either party so objects, the parties shall promptly meet and confer to resolve such objection and establish mutually agreeable figures for each party's Shared Costs. Within five days after such agreement, or if no objections are timely provided by either party, within 35 days after the parties have provided their Shared Cost statements to each other, the party having incurred fewer Shared Costs shall pay the party having incurred more Shared Costs one-half of the difference between the Shared Costs incurred each of the parties. In the absence of written agreement to the contrary, all other costs associated with the Plan and this MOU, including without limitation costs incurred by each party in reviewing and implementing the Plan and this MOU, will be borne by the party incurring them.

5. Once the Plan is adopted, designated representatives of the parties will meet at least annually to discuss, coordinate and review any activities or programs to be conducted under the Plan. No implementation efforts to take place within the boundaries or service area of a party will take place except with the consent of that party. In accordance with Section 4 of this MOU, in the absence of written agreement to the contrary each party will be responsible for the costs of implementation efforts within its boundaries or service area. To the extent there are implementation costs which are not directly attributable to one party's territorial boundaries or service area, the parties will agree in advance on the method of cost-sharing for such efforts.

6. It is understood by the parties that Lone Tree, as a California mutual water company, has no authority or power to impose any fees or assessments upon the District or the

landowners within District's boundaries, or to otherwise regulate any activities of the District. The parties also agree that, except as expressly provided in this MOU, nothing in this MOU or in the Plan will (i) authorize the District to impose any fees or assessments upon Lone Tree or its shareholders, including fees for the extraction or replenishment of groundwater, or (ii) permit any regulation or restriction on the use of groundwater within the boundaries or service area of a party without the express consent of such party. Once the Plan is adopted, it shall not be amended by the District without the express prior consent of Lone Tree.

7. Nothing in this MOU will operate as a request or an agreement to annex lands within Lone Tree's service area to the District. The District and Lone Tree each recognize and acknowledge the autonomy of the other and nothing herein is to be construed as intending to expand District's or Lone Tree's respective boundaries or sphere of influence. Nothing in this MOU will authorize the District to dictate the management, operation or extraction of water by Lone Tree or its shareholders or authorize Lone Tree to dictate the management, operation or extraction of water by District or its landowners.

8. This MOU shall be effective until terminated by either party upon 60 days written notice. Such notice will be delivered to Lone Tree's manager if delivered by the District and will be delivered to District's Chairman of the Board if delivered by Lone Tree. Upon any termination of this MOU, the Plan shall cease to be of force or effect within Lone Tree's service area unless the parties agree in writing to the contrary.

9. This MOU will not become effective until the respective governing bodies of the parties have approved this MOU at a duly held meeting of each party's respective governing body at which a quorum was present.

IN WITNESS WHEREOF, the parties enter into this Memorandum of Understanding to be effective for all purposes on the date first written above.

TURNER ISLAND WATER DISTRICT

By: 
Daniel McNamara
Director

LONE TREE MUTUAL WATER COMPANY

By: 
ROY CATANIA
Vice-President

GROUNDWATER MANAGEMENT PLAN
Turner Island Water District
January 14, 1997

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GROUNDWATER MANAGEMENT PLAN

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I. INTRODUCTION

A. Background and Goals of the District

The Turner Island Water District (the "District") is a public water district formed pursuant to the California Water District Law (Division 13 of the California Water Code). The District is located wholly within Merced County. The District is comprised of approximately 7,518 acres and currently provides only irrigation water service to agricultural water users within its boundaries. A map of the District is attached as Exhibit A.

The District's surface water supply is comprised of drain water and water obtained from neighboring agencies. The District also has the capability of extracting groundwater and delivering it to its water users. In some years, the amount of surface water available for distribution by the District is less than the irrigation demands of the District's water users, who must therefore rely on groundwater resources underlying the District. It is not anticipated that any significant additional surface water supply will become available to the District on a reliable basis in the foreseeable future. As a result, the District has determined that it should assist its water users in the protection and management of the groundwater resources within the District in order to meet the present and future water needs within the District's boundaries.

B. Statutory Authority for Groundwater Management

In 1992, the California Legislature enacted AB 3030 (Water Code Section 10750, et seq.), which grants the District specific powers relative to groundwater. AB 3030 encourages local agencies to undertake management of local groundwater resources, and authorizes the District to prepare and implement a groundwater management program (a "Program"). The powers granted to the District under AB 3030 include, without limitation, groundwater replenishment, prevention of interference with water quantity or quality, and entering into agreements with other local agencies or private parties to manage mutual groundwater supplies.

The District intends to use the statutory powers granted to it, and particularly those granted by AB 3030, to implement the Program described herein to assist the District in its goal to protect and manage the groundwater resources within the District.

II. GROUNDWATER CONDITIONS WITHIN THE DISTRICT

A. Quantity of Groundwater

Groundwater levels within the District vary from year to year due to hydrologic and other conditions. Water users within the District have historically extracted groundwater each year and have placed that water to beneficial use within the

District's boundaries. While water levels of wells in the District are acceptable, the District desires to pursue practices which will help ensure that they are not adversely impacted in the future.

The District anticipates that improved water application technology will continue to be employed by District growers. As a result, it is not anticipated that groundwater use will increase significantly within the District. However, demand on the groundwater basin underlying the District is expected to increase with urban growth, population increases and ongoing shortages of surface water to others dependent on that basin. Competition for groundwater from outside the District may therefore adversely impact groundwater availability within the District.

The District overlies the Merced Basin (the "Basin"). According to the Department of Water Resources, the Basin "stretches westerly along the Madera-Merced County line and the southern boundary of the LeGrand-Athlone Water District, then along the northern boundaries of the LaBranza Water District, Section 14 and 15 in Township 9 South, Range 14 East, and the El Nido Irrigation District. The southern boundary of the Basin then follows the western boundary of El Nido Irrigation District south to the northern boundary of the Sierra Water District, which is followed westerly to the San Joaquin River." (Department of Water Resources, Bulletin 118-80, as amended December 24, 1982, Page 42; hereafter "Bulletin 118-80").

The Basin has not been designated as critically overdrafted by the Department of Water Resources. Water level measurements taken within the District suggest that groundwater elevations within the District's boundaries are currently at the general level of groundwater levels throughout the history of the District.

The District is interested in investigating groundwater recharge and groundwater banking programs. In particular, the District wishes to explore indirect or "in lieu" recharge programs which might involve purchasing surplus surface water to minimize groundwater extractions. If an additional surface water supply could be obtained, that supply could be conveyed to District landowners and water users for direct or in-lieu recharge.

The District also recognizes that groundwater usage by neighboring agencies and individuals can have a significant impact on groundwater conditions within the District and the Basin. Therefore, while the District will not seek to regulate groundwater or extractions outside the District's boundaries, the District will pursue coordination and cooperation with other entities and groundwater users within the Basin to help develop and coordinate an approach to managing the region's groundwater resources.

B. Quality of Groundwater

The groundwater within the District's service area does not appear to suffer from severe groundwater quality degradation. If such degradation were to be noted, the District would consider appropriate corrective actions as part of its Program.

III. ADOPTION OF PROGRAM

A. Findings and Adoption

After careful consideration of the foregoing and of all evidence presented to the District in the proceedings conducted relative to the adoption of a groundwater management plan by the District, the District finds and declares that the local management of the groundwater resources within the District is both consistent with the District's goals and in the best interests of the landowners and water users within the District in order to protect and enhance the quantity and quality of groundwater available to those landowners and water users.

The District makes the foregoing findings after weighing the potential impacts of the adoption of a plan and implementation of a Program and has concluded that the benefits associated with such an undertaking far outweigh any adverse impacts thereof. The District therefore adopts the plan and Program set forth herein in accordance with AB 3030.

B. Management Area and Cooperation with Other Agencies

The District's Program will be effective throughout the entire District. Because the Basin services water users and other agencies outside the District's boundaries, the District will be receptive to coordinating its Program with others so as to facilitate protection and enhancement of the groundwater resources within the Basin and to avoid whenever possible duplicative or inconsistent groundwater management efforts. To that end, as a part of its Program, the District may enter into joint powers agreements or memoranda of understanding with public or private parties overlying the Basin for the purpose of implementing or coordinating groundwater management activities. In particular, the District will pursue cooperative arrangements with the Lone Tree Mutual Water Company, an adjacent mutual water company, pursuant to which the District and the Lone Tree Mutual Water Company can cooperatively manage their respective groundwater supplies.

It shall be the policy of the District that agreements entered into between the District and neighboring landowners or water suppliers shall recognize the autonomy of such landowners or suppliers. In particular, the District does not intend to expand either its boundaries or its sphere of influence by virtue of adopting the Program. Instead, the District believes the most appropriate relationship between the District and such landowners

or water suppliers is one of mutual cooperation in the identification of potential problems with regard to the quality and quantity of groundwater in the Basin. Therefore, the District shall not seek to dictate the management, operation or extraction of water by such landowners or water suppliers except as otherwise expressly agreed to by the District and such landowners or water suppliers. Such agreements will provide for coordination and cooperation between the District and such landowners or water suppliers in order to facilitate the exchange of information and the identification of projects which the District and such landowners and/or water suppliers may wish to engage in to improve the Basin's groundwater supply.

IV. GROUNDWATER MANAGEMENT PROGRAM

A. Management Objectives

The general objectives of the District's Program shall be to monitor and, if appropriate and feasible, take actions to enhance and preserve the long-term viability of the groundwater supply within the District's service area with respect to both quantity and quality. To accomplish those objectives, the District reserves to itself all powers granted by AB 3030 to agencies adopting Programs, and by other applicable law, except to the extent expressly set forth herein.

At the present time, groundwater levels within the District are at an acceptable level. Groundwater levels within the District dropped during the drought years of 1986-1992. However, some replenishment of the Basin within the District's boundaries and restoration of the District's groundwater levels has occurred due to heavy runoff during 1993 and 1995. It is a goal of the District to monitor the portions of the Basin covered by the District's Program for potential overdraft.

In the event groundwater levels within the District drop below an acceptable level, the District will consider taking action to address the groundwater level decline. Without in any way limiting the actions which might be taken to achieve the District's objectives, set forth below are a number of activities the District intends to evaluate.

1. Education

The District may conduct or sponsor programs to educate and inform the District's landowners and water users regarding the status of the District's efforts under its Program including, but not limited to, the status of groundwater supplies and conservation efforts. Those educational programs may also include information on conservation techniques and on-farm water management.

2. Conservation

The District will at all times encourage effective water conservation measures. The District will be receptive to possible incentive programs that might be made available to landowners and water users to enhance the efficient use of water within the District's service area. The District is committed to assisting in the efficient management of water supplies so as to maximize the beneficial use of groundwater resources to meet the water needs of the landowners and water users within the District.

3. Groundwater Recharge and Banking

For purposes of its Program, the District defines groundwater recharge as any activity undertaken for the purpose of increasing the overall groundwater supply generally available to District landowners and water users at large. Recharge may be direct through the intentional percolation of water into the underground, or may be indirect (or "in lieu") through the delivery of surface water to landowners and water users who would otherwise have pumped groundwater, thus leaving water in the underground for future use. The District considers groundwater banking to occur when the District, either by itself or in cooperation with others, imports surface water and causes its direct or indirect storage in a groundwater aquifer underlying the District's service area for the purpose of enhancing groundwater supplies within the District's service area.

In particular, the District intends to investigate the acquisition of surplus water as a means of replenishing groundwater supplies. The District also intends to support appropriate recharge and banking programs conducted outside of its boundaries which will increase groundwater storage in and adjacent to the District with the overriding goal of improving groundwater conditions within the District.

4. Development and Importation of New Surface Supplies

The District intends to encourage and assist landowners and water users in the transfer of water into the District, which will have the effect of causing "in lieu" recharge. The District also intends to pursue the acquisition of new water supplies should they become available at affordable costs, and intends to support the development of new surface storage and water supply projects.

5. Prohibition of Exportation of Groundwater

In the event of long-term overdraft within the District's service area, the District will investigate the prohibition of direct or indirect exportation of native groundwater from the basin underlying the District's service area. Such exportation

may take the form of direct groundwater pumping for conveyance to other areas.

However, the District's prohibition and opposition to exportation of groundwater will not automatically extend to any groundwater banking arrangement which includes full mitigation measures. To the extent water has been imported into the District's service area and banked, its subsequent extraction and use (or transfer) will not be precluded by the District provided adequate safeguards are in place to ensure that no District landowners or water users are injured. In this regard, the District will consider imposing a policy that a minimum of 150% more water be banked (recharged) than is subsequently recovered from groundwater storage.

6. Monitoring and Evaluation of Basin

As noted above, the District intends to track and evaluate groundwater depths throughout its service area. If necessary and if such data are available, the District may also collect groundwater data developed by third parties. Information developed will be used to guide the District's specific activities under its various management programs.

7. Limitations on Pumping

Under AB 3030 the District has the power to limit or suspend groundwater extractions. However, such limits will only be implemented under its Program if the District determines through study and investigation that groundwater replenishment programs or other alternative sources of water supply have proved insufficient or infeasible to lessen groundwater demand. In the unlikely event that a replenishment program developed by the District is inadequate and it becomes necessary to reduce groundwater extractions, the District would accomplish such reductions only under a voluntary program which would include suitable incentives to compensate users for reducing their groundwater pumping.

The District will not attempt to unilaterally restrict or otherwise interfere with any landowner or water user exercising a valid right to pump groundwater.

Should the District determine that a curtailment of groundwater pumping is necessary, the District will hold at least one public hearing prior to implementing any program to voluntarily reduce extractions. Notice of the public hearing will be published once a week for two successive weeks in a newspaper which is published at least once a week. The District will also mail notices of any such hearing to each of its landowners. At the public hearing the Board of Directors of the District will solicit input from the District's landowners and water users regarding any proposed program to limit extractions.

8. Review of Land Use Plans

If necessary, the District will participate with the County of Merced in the review and evaluation of land use plans which have the potential to affect groundwater supplies underlying the District. The District will pursue actions to minimize any adverse impact on groundwater supplies as a result of any proposed land use changes.

9. Fees

Under AB 3030, the District is authorized to levy equitable water management fees or assessments for groundwater management under the Program based upon the amount of groundwater extracted from the Basin to pay for costs incurred by the District for groundwater management under the Program. Such costs include, but are not limited to, the acquisition of replenishment water, administrative and operating costs, and costs of construction of capital facilities necessary to implement the Program. No fees or assessments will be imposed on the extraction and replacement of groundwater pursuant to a groundwater remediation program required by law or a groundwater storage contract with the District. Moreover, no fees or assessments authorized by AB 3030 shall be assessed by the District unless such fees or assessments are first authorized by an election of the District's voters. Only fees and assessments now levied by the District, or which are authorized other than by AB 3030, will be levied by the District in the absence of such an election.

B. Water Quality

Because other agencies in Merced County take primary responsibility for groundwater quality matters, the District's role in groundwater quality improvement must necessarily be one of support to those agencies. The District therefore intends to focus any efforts relative to groundwater quality issues in cooperation with those other agencies.

However, in cooperation with other agencies, many of the elements of the District's Program intended to address groundwater overdraft can also serve to address groundwater quality concerns within that portion of the Basin underlying the District. Subject to the cooperation of the appropriate agencies and subsequent direction from the District's board of directors, some of the activities in which the District may (but need not) elect to participate include the following:

- Water quality monitoring;
- Participation in programs to treat, decontaminate and/or otherwise dispose of poor quality groundwater;
- Identification and elimination, where possible, of point sources of contamination of usable groundwater;

--Determination and reduction, where practical, of significant non-point sources of groundwater degradation; and/or

--Pursuit of recharge programs with quality enhancement as a stated goal.

1. Wellhead and Recharge Area Protection

Groundwater contamination can accrue where wellhead and recharge areas are not adequately protected from inappropriate land uses and practices that could result in the transfer of pollutants from the surface to groundwater. Since control of such land uses and practices is vested with a particular city or the County of Merced, the District's efforts relative thereto must be limited to monitoring and reporting to the appropriate land use agencies on any activity that might result in contamination of the groundwater.

2. Well Construction and Abandonment

The administration of a well construction and well abandonment or destruction program has been delegated to the counties by the Legislature. The County of Merced has adopted an ordinance regarding the proper construction, abandonment or destruction of groundwater wells within the County. If it becomes aware of any such condition, the District will bring to the attention of the County a condition that could result in material degradation of the groundwater resource.

V. RULES AND REGULATIONS

As necessary, the District will adopt rules and regulations for the implementation and enforcement of the Program. However, the District is not authorized to make a binding determination of the water rights of any person or entity, and nothing in the District's Program shall result in any change in groundwater allocations to District landowners or water users. In adopting rules and regulations, the District will consider the potential impact of those rules and regulations on business activities, including agricultural operations, and to the extent practical and consistent with the protection of the District's groundwater resources, minimize any adverse impacts on those business activities.

VI. ORDINANCE

The District's Program, and all rules and regulations adopted in accordance therewith, will be by resolution of the Board of Directors of the District, enforceable in the manner provided by law.

Appendix D: Water Measurement Practices and Corrective Actions

Description of Water Measurement Best Practices and Corrective Actions.

All deliveries made by Lone Tree Mutual Water Company (LTMWC or Company) are measured and billed volumetrically. Approximately 42% of the delivery points are metered with a mechanical or magnetic flow meter. These meters are read monthly by Company staff. The remaining 58% of the delivery points are gravity deliveries. These points are visited by Company staff daily during deliveries to take the measurements necessary to calculate flow. Methods developed by the University California (Leaflet 2956) are used for the flow calculations, which are converted into daily delivery volumes.

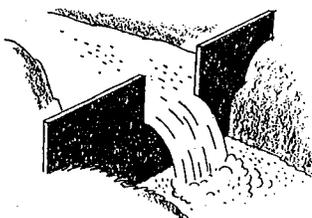
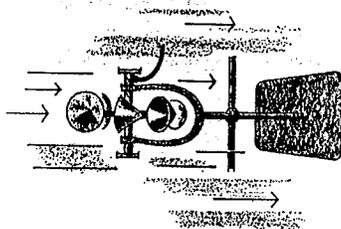
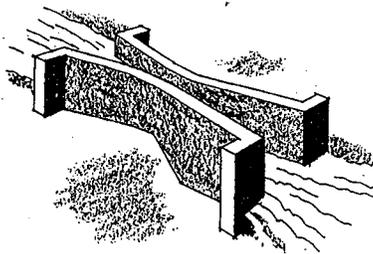
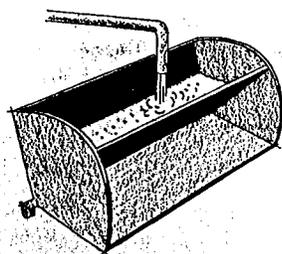
Company staff has direct access to all delivery points.

Collection of Water Delivery Data: Volumetric delivery data from each flow meter is collected monthly and entered into the Company's water billing system. Gravity delivery flow data is collected daily (during deliveries) and entered into the Company's data system where it is converted to a volume for billing.

Irrigated Acreage: Water users within LTMWC are required to report their cropped (irrigated) acreage at the beginning of the water year.

Corrective Actions/Quality Control Procedures: Meters are visually inspected during each meter reading to confirm that they are operating correctly. If a meter is discovered to be not operating or installed correctly, the delivery is stopped until the water user corrects the problem. Installation and maintenance of the meters are the responsibility of the water user.

MEASURING IRRIGATION WATER



Division of Agricultural Sciences
UNIVERSITY OF CALIFORNIA
REPRINTED FEBRUARY 1981

LEAFLET
2956

the rate of flow. Free flow discharge for various sizes of Parshall flumes is given in Table 8, page 44.

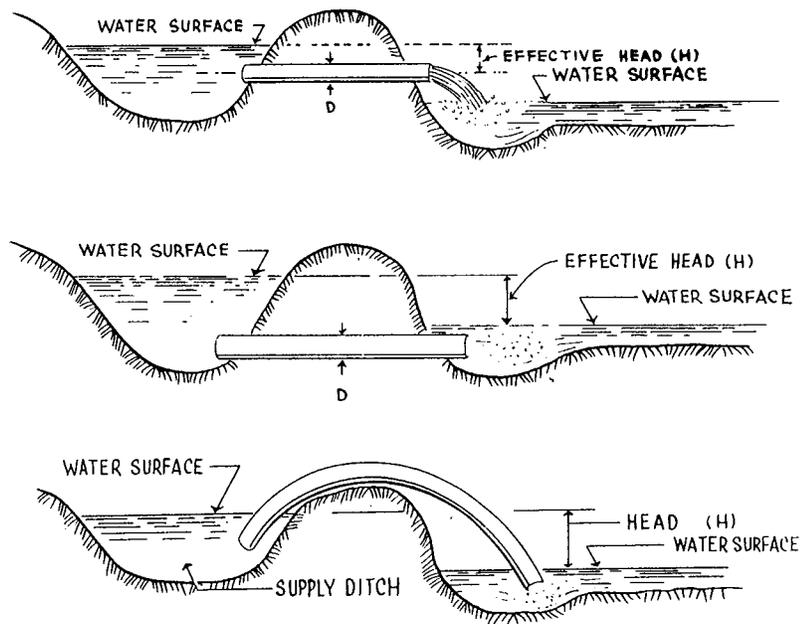
Submerged flow. Where the flow is submerged, it is necessary to install an "H_b" gage near the lower end of the throat section as illustrated in the drawing on page 17.

When the relation of the two heads, $\left(\frac{H_b}{H_a}\right)$, exceeds 0.7, a correction is subtracted from free flow conditions to obtain the correct rate of flow. This correction is determined by use of the charts on page 18. For large flumes multiply the correction for the 1-foot flume by the factor (M) given in a table on page 24. This value is then subtracted from the free-flow discharge to obtain the corrected flow.

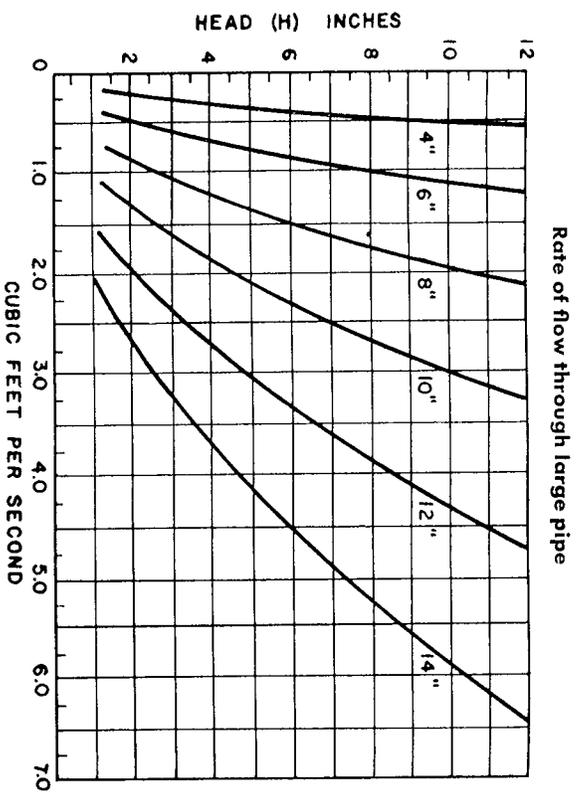
Miscellaneous devices

Small venturi flumes. In irrigation evaluation work it has been found advantageous to use a small Venturi flume to measure water in furrows. These flumes consist of only a converging section. Normally they are constructed of metal and require calibration to determine flow characteristics.

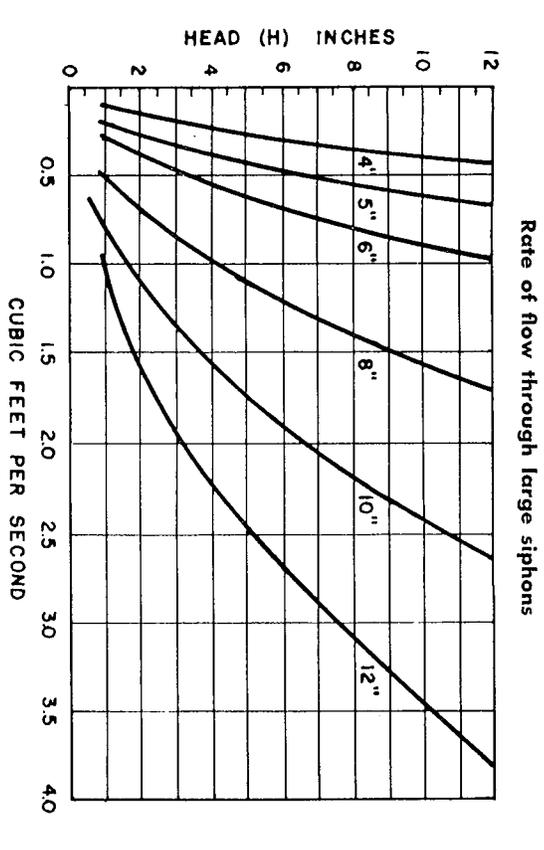
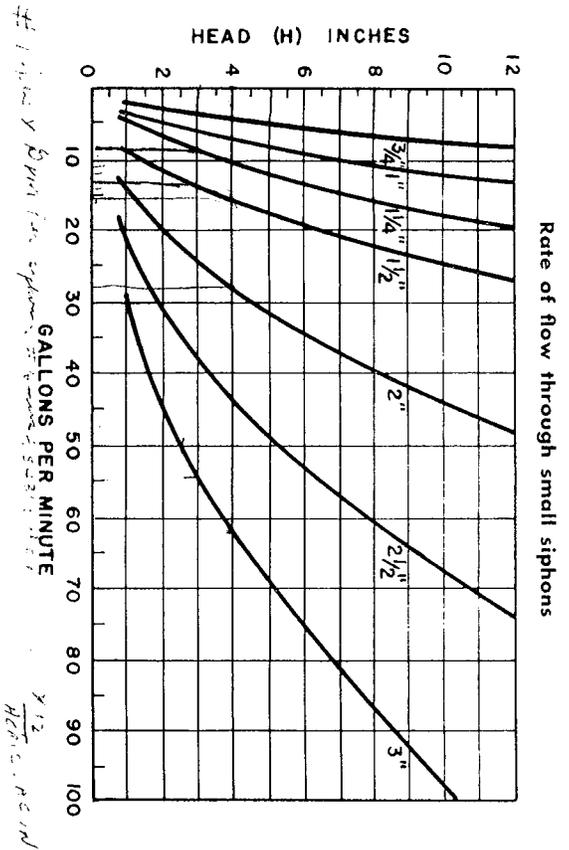
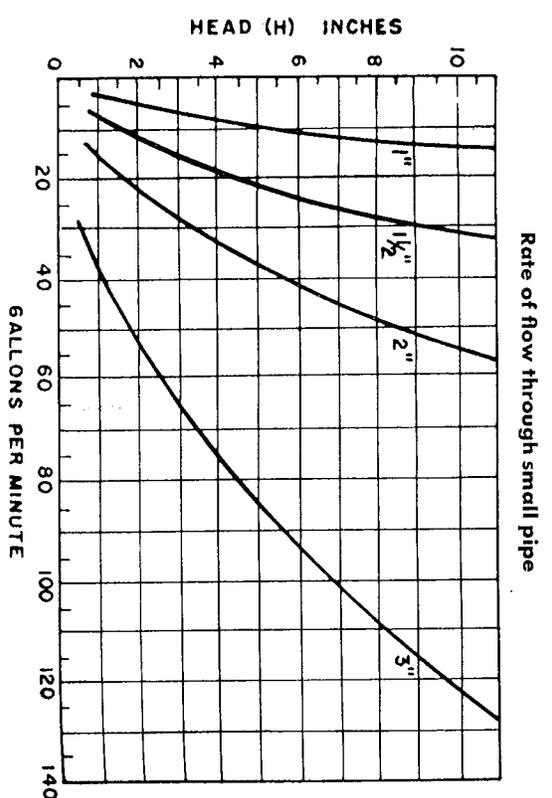
Siphons and pipe turnouts. Although siphons and pipe are used to deliver water from a ditch to a furrow or check, they can be used to measure the rate of flow being delivered. The drawing below shows the method of measuring the head. Once the head is determined the rate of flow can be found directly in the diagram on page 20 for pipe turnouts, in the diagram on page 21 for siphons.



Measuring head on spiles and siphons. For free-flowing spiles (top) measure head as difference in elevation between water in the ditch and the center of the downstream end of the spile. For submerged spiles or siphons (center and bottom) measure difference in elevation of water in ditch and water in field.



To determine rate of flow start at left, move horizontally from point of measured head to the size of pipe (or siphon), then vertically down to find rate of flow in cubic feet per second.



SIPHON PIPE MEASUREMENT CHART

<u>Pipe Size:</u>	<u>3/4"</u>	<u>GPM</u>
Head Drop:	2	= 2.5
	2 1/2	= 3.0
	3	= 3.5
	3 1/2	= 4.0
	4	= 4.0
	4 1/2	= 4.5
	5	= 5.0
	5 1/2	= 5.0
	6	= 5.5
	7 1/2	= 6.0
	7	= 6.5
	7 1/2	= 6.5
	8	= 7.0

<u>Pipe Size:</u>	<u>1"</u>	<u>GPM</u>
Head Drop:	2	= 4.5
	2 1/2	= 5.0
	3	= 5.5
	3 1/2	= 6.0
	4	= 6.5
	4 1/2	= 7.0
	5	= 7.5
	5 1/2	= 7.5
	6	= 8.0
	6 1/2	= 8.5
	7	= 9.0
	7 1/2	= 9.5
	8	= 10.0

<u>Pipe Size:</u>	<u>1 1/4"</u>	<u>GPM</u>
Head Drop:	2	= 7
	2 1/2	= 7.5
	3	= 8.5
	3 1/2	= 9.0
	4	= 10.0
	4 1/2	= 11.0
	5	= 12.0
	5 1/2	= 13.0
	6	= 13.5
	6 1/2	= 14.5
	7	= 15.0
	7 1/2	= 16.0
	8	= 16.0

<u>Pipe Size:</u>	<u>1 1/2"</u>	<u>GPM</u>
Head Drop:	2	= 12
	2 1/2	= 13
	3	= 14
	3 1/2	= 15
	4	= 16
	4 1/2	= 17
	5	= 18
	5 1/2	= 19
	6	= 19.5
	6 1/2	= 20
	7	= 21
	7 1/2	= 22
	8	= 23

<u>Pipe Size:</u>	<u>2"</u>	<u>GPM</u>
Head Drop:	2	= 20
	2 1/2	= 22
	3	= 24
	3 1/2	= 25
	4	= 28
	4 1/2	= 30
	5	= 31
	5 1/2	= 33
	6	= 34
	6 1/2	= 36
	7	= 37
	7 1/2	= 39
	8	= 40

<u>Pipe Size:</u>	<u>2 1/2"</u>	<u>GPM</u>
Head Drop:	2	= 30
	2 1/2	= 35
	3	= 38
	3 1/2	= 40
	4	= 44
	4 1/2	= 47
	5	= 50
	5 1/2	= 51
	6	= 53
	6 1/2	= 55
	7	= 57
	7 1/2	= 59
	8	= 60

<u>Pipe Size:</u>	<u>3"</u>	<u>GPM</u>
Head Drop:	2	= 45
	2 1/2	= 50
	3	= 55
	3 1/2	= 58
	4	= 61
	4 1/2	= 65
	5	= 70
	5 1/2	= 72
	6	= 76
	6 1/2	= 78
	7	= 80
	7 1/2	= 85
	8	= 87

<u>Pipe Size:</u>	<u>4"</u>	<u>GPM</u>
Head Drop:	2	= 72
	2 1/2	= 81
	3	= 90
	3 1/2	= 94
	4	= 103
	4 1/2	= 112
	5	= 121
	5 1/2	= 130
	6	= 139
	6 1/2	= 144
	7	= 148
	7 1/2	= 153
	8	= 157

<u>Pipe Size:</u>	<u>6"</u>	<u>GPM</u>
Head Drop:	2	= 171
	2 1/2	= 189
	3	= 216
	3 1/2	= 229
	4	= 247
	4 1/2	= 270
	5	= 279
	5 1/2	= 292
	6	= 315
	6 1/2	= 324
	7	= 337
	7 1/2	= 351
	8	= 360

GPM X # of pipes = "Total GPM" to the Field.