Attachment 10- AB1420 and Water Meter Compliance

Humboldt Bay Municipal Water District Groundwater Study

DWR Local Groundwater Assistance Grant Program, P84 LGA 2012 Application

BMS Electronic File: “Att10_LGA12_HBMWD_AB1420andWaterMeter_1of1”

As an urban water supplier for the Humboldt Bay region, Humboldt Bay Municipal Water District maintains compliance with the requirements of the State of California Assembly Bill (AB) 1420 and the California Department of Water Resources (DWR) water metering protocols. Documentation regarding compliance with AB1420 and water metering requirements are attached.

AB 1420 Self- Certification Statement Table 1

Note: Table 1 documents Status of Past and Current BMP implementation.

Self-Certification Statement: The Urban Water Supplier and its authorized representative certifies, under penalty of perjury, that all information and claims, stated in this table, regarding compliance and implementation of the BMPs, including alternative conservation approaches, are true and accurate. This signed AB 1420 Self-Certification Statement Table 1, and Table 2 are the basis for granting funds by the Funding Agency. Falsification and/or inaccuracies in AB 1420 Self Certification Statement Table 1, and Table 2 and in any supporting documents substantiating such claims may, at the discretion of the funding agency, result in loss of all State funds to the applicant. Additionally, the Funding Agency, in its sole discretion, may halt disbursement of grant or loan funds, not pay pending invoices, and/or pursue any other applicable legal remedy and refer the matter to the Attorney General's Office.

Name of Signatory Carol Rische Title of Signatory General Manager Signature of signatory Carol Rische Date 3/16/11

Application Date:

Proposal Identification Number: 362 CUWCC Member? Yes/No NO

Has Urban Water Supplier submitted a 2005 Urban Water Management Plan? Yes/No Yes Is the UWM Plan Deemed Complete by DWR? Yes/No Yes

Applicant Name: Humboldt Bay Municipal Water District

Project Title:

Applicant's Contact Information: Name: Carol Rische Phone: 707-443-5018 E-mail: gm@hbmwd.com

Participants:

Retailer (List Below)	*Wholesaler (List Below)*
	Humboldt Bay Municipal Water District

C1	C2	C3	C4	C5	*C6	C7	**C8	**C9	**C10	C11	C12	C13	C14	C15	C16	C17	C18
				BMP Implemented by Retailers and/or Wholesalers / *BMP*			Compliance Options/Alternative Conservation Approaches (1)			BMP Is Exempt (2)			BMP Implementation Requirements Met				
BMPs required for Wholesale Supplier	BMPs required for Retail Supplier	BMPs	Retailer *Yes/No*	Wholesaler *Yes/No*	Regional *Yes/No*	BMP Checklist	Flex Track	Gallons Per Capita Per Day GPCD	Not Cost Effective	Lack of Funding	Lack of Legal Authority	CUWCC MOU Requirement Met: Retailer *Yes/No*	CUWCC MOU Requirement Met: Wholesaler *Yes/No*	Date of BMP Report Submitted to CUWCC for (2007-2008) (MOU Signatories)	Date BMP Implementation Data Submitted to DWR in CUWCC Format (Non MOU Signatories) (3)	All Supporting Documents have been Submitted Yes/No
	✓	BMP 1 Water Survey for Single/Multi-Family Residential Customers														
	✓	BMP 2 Residential Plumbing Retrofit														
✓	✓	BMP 3 System Water Audits, Leak Detection		Yes			✓						yes		2005 UWMP	yes
✓	✓	BMP 3 Leak Repairs		Yes			✓						yes		2005 UWMP	yes
	✓	BMP 4 Metering with Commodity Rates for All New connections														
	✓	BMP 4 Retrofit of Existing Connections														

C1	C2	C3	C4	C5	*C6	C7	**C8	**C9	**C10	C11	C12	C13	C14	C15	C16	C17	C18
				BMP Implemented by Retailers and/or Wholesalers / *BMP*			Compliance Options/Alternative Conservation Approaches (1)			BMP Is Exempt (2)			BMP Implementation Requirements Met				
BMPs required for Wholesale Supplier	BMPs required for Retail Supplier	BMPs	Retailer *Yes/No*	Wholesaler *Yes/No*	Regional *Yes/No*	BMP Checklist	Flex Track	Gallons Per Capita Per Day GPCD	Not Cost Effective	Lack of Funding	Lack of Legal Authority	CUWCC MOU Requirement Met: Retailer *Yes/No*	CUWCC MOU Requirement Met: Wholesaler *Yes/No*	Date of BMP Report Submitted to CUWCC for (2007-2008) (MOU Signatories)	Date BMP Implementation Data Submitted to DWR in CUWCC Format (Non MOU Signatories) (3)	All Supporting Documents have been Submitted Yes/No
	✓	BMP 5 Large Landscape Conservation Programs and Incentives														
	✓	BMP 6 High-Efficiency Washing Machine Rebate Programs														
✓	✓	BMP 7 Public Information		Yes		✓							yes		2005 UWMP	yes
✓	✓	BMP 8 School Education		Yes		✓							Yes		2005 UWMP	yes
	✓	BMP 9 Conservation programs for Commercial, Industrial, and Institutional (CII) Accounts														
✓		BMP 10 Wholesale Agency Assistance Programs		Yes		✓							yes		March 2011	yes
	✓	BMP 11 Conservation Pricing														
✓	✓	BMP 12 Conservation Coordinator		Yes		✓							yes		March 2011	yes
	✓	BMP 13 Water Waste Prohibitions														
	✓	BMP 14 Residential ULFT Replacement Programs														

***C6:** Wholesaler may also be a retailer (supplying water to end water users)
****C8, **C9, **, and C10:** Agencies choosing an alternative conservation approach are responsible for achieving water savings equal or greater than that which they would have achieved using only BMP list.

(1) For details, please see: http://www.cuwcc.org/mou/exhibit-1-bmp-definitions-schedules-requirements.aspx.
(2) BMP is exempt based on cost-effectiveness, lack of funding, and lack of legal authority criteria as detailed in the CUWCC MOU
(3) Non MOU signatories must submit to DWR reports and supporting documents in the same format as CUWCC.

AB 1420 Self- Certification Statement Table 2

Provide Schedule, Budget, and Finance Plan to Demonstrate Commitment to Implement All BMP's to Become in Compliance with BMP Implementation - Commencing Within 1st Year of Agreement for Which Applicant Receives Funds.

Self-Certification Statement: The Urban Water Supplier and its authorized representative certifies, under penalty of perjury, that all information and claims, stated in this table, regarding compliance and implementation of the BMPs, including alternative conservation approaches, are true and accurate. This signed AB 1420 Self-Certification Statement Table 1 and Table 2 are the basis for granting funds by the Funding Agency. Falsification and/or inaccuracies in AB 1420 Self Certification Statement Table 1 and Table 2, and in any supporting documents substantiating such claims may, at the discretion of the funding agency, result in loss of all State funds to the applicant. Additionally, the Funding Agency, in its sole discretion, may halt disbursement of grant or loan funds, not pay pending invoices, and/or pursue any other applicable legal remedy and refer the matter to the Attorney General's Office.

Name of Signatory Cecil Wilson Title of Signatory Business Manager Signature of signatory _____ Date 7/6/12

Application Date:

Proposal Identification Number: P84 LGA 2012 **CUWCC Member?** Yes/No NO

Applicant Name: Humboldt Bay Municipal Water District **Is the UWM Plan Deemed Complete by DWR?** Yes/No YES

Project Title:

Applicant's Contact Information: Name Cecil Wilson, Business Manager/Controller

Participants:	*Retailer (List Below)*		

C1	C2	C3	C4	C5	*C6	C7	C8	**C9	**C10	**C11	C12			C13	C14	C15	C16	C17	C18	C19
				BMP Implemented by Retailers and/or Wholesalers				Compliance Options / Alternative Conservation Approaches (1)			BMP is Exempt (2)			Implementation Scheduled to Commence within 1st Year of Agreement						
CUWCC 2010 Flex Track BMPs	BMPs required for Wholesale Supplier	BMPs required for Retail Supplier	BMPs	Retailer Yes/No	Wholesaler Yes/No	Regional Yes/No	Alternative Conservation Approaches Yes/No	BMP Checklist	Flex Track	Gallons Per Capita Per Day GPCD	Not Cost Effective	Lack of Funding	Lack of Legal Authority	Start Date (MM/YR)	Completion Level (%)	BMP Completion Date (MM/YR)	Budget (Dollars)	Funding Source & Finance Plan to Implement BMPs	Meets CUWCC Coverage Yes/No	Funds Requested, if Available. (See AB 1420 Compliance Table 3) Yes/No
1. Utility Operations Programs																				
1.11	✓	✓	BMP 12 Conservation Coordinator		Yes			✓						Mar-11					Yes	
1.12		✓	BMP 13 Water Waste Prohibitions																	
1.13	✓	✓	BMP 10 Wholesale Agency Assistance Programs		Yes			✓						Mar-11					Yes	
1.20	✓	✓	BMP 3 System Water Audits, Leak Detection/**Repair**		Yes				✓					Dec-05					Yes	
1.30		✓	BMP 4 Metering with Commodity Rates for All New/**Retrofit of Existing** connections																	
1.40		✓	BMP 11 Conservation Pricing																	
2. Educational Programs																				
2.10	✓	✓	BMP 7 Public Information		Yes			✓						Dec-05					Yes	
2.20	✓	✓	BMP 8 School Education		Yes			✓						Dec-05					Yes	
3. Residential																				
3.11		✓	BMP 1 **Indoor** Water Survey for Single/Multi-Family Residential Customers																	
3.12			BMP 1 **Outdoor** Water Survey for Single/Multi-Family Residential Customers																	
3.20		✓	BMP 2 Residential Plumbing Retrofit																	

CUWCC 2010 Flex Track BMPs	BMPs required for Wholesale Supplier	BMPs required for Retail Supplier	BMPs	BMP Implemented by Retailers and/or Wholesalers				Compliance Options / Alternative Conservation Approaches (1)			BMP is Exempt (2)			Implementation Scheduled to Commence within 1st Year of Agreement						
				Retailer *Yes/No*	Wholesaler *Yes/No*	Regional *Yes/No*	Alternative Conservation Approaches Yes/No	BMP Checklist	Flex Track	Gallons Per Capita Per Day GPCD	Not Cost Effective	Lack of Funding	Lack of Legal Authority	Start Date (MM/YR)	Completion Level (%)	BMP Completion Date (MM/YR)	Budget (Dollars)	Funding Source & Finance Plan to Implement BMPs	Meets CUWCC Coverage Yes/No	Funds Requested, if Available. (See AB 1420 Compliance Table 3) Yes/No
3.30		✓	BMP 6 High-Efficiency Washing Machine Rebate Programs																	
3.40		✓	BMP 14 Residential ULFT Replacement Programs																	
4. Commercial, Industrial, Institutional																				
4.00		✓	BMP 9 Conservation programs for Commercial, Industrial, and Institutional (CII) Accounts																	
5. Landscape																				
5.00		✓	BMP 5 Large Landscape Conservation Programs and Incentives																	

*C6: Wholesaler may also be a retailer (supplying water to end water users)
**C9, ** C10, and **C11: Agencies choosing an alternative conservation approach are responsible for achieving water savings equal or greater than that which they would have achieved using only BMP list.
(1) For details, please see http://www.cuwcc.org/mou/exhibit-1-bmp-definitions-schedules-requirements.aspx.
(2) BMP is exempt based on cost-effectiveness, lack of funding, or lack of legal authority, as detailed in the CUWCC MOU.

California State Water Resources Control Board
California Department of Water Resources
California Department of Public Health

CERTIFICATION FOR COMPLIANCE WITH WATER METERING REQUIREMENTS FOR FUNDING APPLICATIONS

In 2004, Assembly Bill 2572 added section 529.5 to the Water Code, providing that, commencing January 1, 2010, urban water suppliers must meet certain volumetric pricing and water metering requirements in order to apply for permits for new or expanded water supply, or state financial assistance for the following types of projects:

1. wastewater treatment projects
2. water use efficiency projects (including water recycling projects)
3. drinking water treatment projects

For the purposes of compliance with Section 529.5, a "water use efficiency project" means an action or series of actions that ensure or enhance the efficient use of water or result in the conservation of water supplies.

Please consult with your legal counsel and review sections 525 through 529.7 of the Water Code before completing this certification.

Applicants Affected
This requirement applies to urban water suppliers.

"Urban water supplier" means a supplier, either publicly or privately owned, providing water for municipal purposes either directly or indirectly to more than 3,000 customers or supplying more than 3,000 acre-feet of water annually. An urban water supplier includes a supplier or contractor for water, regardless of the basis of right, which distributes or sells for ultimate resale to customers.

When Certification is Required
State Water Resources Control Board (SWRCB): The application for financial assistance must include a completed and signed certification form demonstrating compliance with the water metering requirements.

Department of Water Resources (DWR) funding applications: This certification must be completed and submitted with the funding application. Check the specific proposal solicitation package for directions on applicability and submittal instructions.

Department of Public Health (DPH) Safe Drinking Water State Revolving Fund Program: This certification must be completed and submitted with the executed Notice of Acceptance of Application (NOAA).

California State Water Resources Control Board
California Department of Water Resources
California Department of Public Health

CERTIFICATION FOR
COMPLIANCE WITH WATER METERING REQUIREMENTS
FOR FUNDING APPLICATIONS

Funding Agency name: California Department of Water Resources

Funding Program name: Safe Drinking Water, Water Quality and Supply, Flood Control, River and Coastal Protection Bond Act of 2006

Applicant (Agency name): Humboldt Bay Municipal Water District

Project Title (as shown on application form): Local Groundwater Assistance Grant

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Please check one of the boxes below and sign and date this form.

☐ As the authorized representative for the applicant agency, I certify under penalty of perjury under the laws of the State of California, that the agency is not an urban water supplier, as that term is understood pursuant to the provisions of section 529.5 of the Water Code.

☒ As the authorized representative for the applicant agency, I certify under penalty of perjury under the laws of the State of California, that the applicant agency has fully complied with the provisions of Division 1, Chapter 8, Article 3.5 of the California Water Code (sections 525 through 529.7 inclusive) and that ordinances, rules, or regulations have been duly adopted and are in effect as of this date.

I understand that the Funding Agency will rely on this signed certification in order to approve funding and that false and/or inaccurate representations in this Certification Statement may result in loss of all funds awarded to the applicant for its project. Additionally, for the aforementioned reasons, the Funding Agency may withhold disbursement of project funds, and/or pursue any other applicable legal remedy.

Carol Rische
Name of Authorized Representative
(Please print)

Carol Risch
Signature

General Manager
Title

07/06/2012
Date

Humboldt Bay Municipal Water District
Urban Water Management Plan
2005

Humboldt Bay Municipal Water District
828 Seventh Street
Eureka, CA 95501

Foreword

The Humboldt Bay Municipal Water District has prepared this Plan in the format and order presented in the California Department of Water Resources' "Guidebook to Assist Water Suppliers in the preparation of a 2005 Urban Water Management Plan" (January 18, 2005). In some sections, proposed tables of information are not applicable to this District. In these instances, the table number and title is referenced within the text. This serves as a place holder so that the table numbering sequence remains in concert with the "Guidebook"; and thereby making the content easy to review.

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A - Safe Yield of Water from Ruth Lake – A Historical Perspective
B - Draft Resolution Declaring a Water Shortage Emergency
C - Proof of Certificate of Publication of the Legal Notice of Public Hearing for UWMP
D - Proof of District's Board Agenda Notice of Public Hearing for UWMP
E - Copy of Resolution Adopting the District's 2005 Urban Water Management Plan

Humboldt Bay Municipal Water District
Urban Water Management Plan
2005

Introduction

This Urban Water Management Plan (UWMP) for the Humboldt Bay Municipal Water District (HBMWD or District) has been prepared in accordance with the California Urban Water Management Planning Act of 1983 (AB 797) as amended. This update was prepared and adopted during the summer and fall of 2005. It contains all information required by the California Water Code, Division 6, Part 2.6. This is the fifth such plan prepared by the District. The last plan was submitted in October 2000 and amended in February 2004.

The District is primarily a regional water wholesaler. Under contracts, the District provides treated, potable water for domestic and business use to seven municipalities. The District also has one contract in place with an industrial customer to deliver untreated surface water. The District provides water to less than 200 retail customers.

The data used for preparing this report comes primarily from the District's operational records. Figures relating to watershed runoff were obtained from the United States Geological Survey. Current and projected population figures for Humboldt County are based on data from the U.S. Census Bureau.

Section 1 - Agency Coordination

Contact was made with the District's four municipal customers who qualify as an Urban Water Supplier as defined by the Urban Water Management Planning Act (Table 1). The District provided assistance and information needed by these agencies in the preparation of their plans; and they reciprocated. All seven of the District's municipal customers will be provided with copies of the District's adopted plan.

Table 1 – Coordination with Appropriate Agencies

Agency	Participated In Plan Development	Commented On the Draft Plan	Attended Public Meetings	Contacted For Assistance	Received Copy of Draft Plan	Notice of Intention To Adopt
Arcata, City of	X	X	X	X	X	X
Eureka, City of	X	X	X	X	X	X
Humboldt CSD	X	X	X	X	X	X
McKinleyville CSD	X	X	X	X	X	X
County of Humboldt				X	X	X
Dept Water Resources				X	X	

Section 2 - Contents of Plan

1. Appropriate Level of Planning for Size of Agency

The level of water management planning and the details provided in this Plan reflects the size and complexity of the District, including the number of customers served and the volume of water supplied. Unlike many regions in the state, the District has an abundant supply of water to fully meet the regional demand for water.

2. Service Area Information with 25-Year Projections

Location

The District is located in Humboldt County and serves the greater Humboldt Bay region (Figure 1). The District was established in 1956 to provide municipal and industrial water for the area. The District's service area includes the most heavily populated and developed parts of the County.

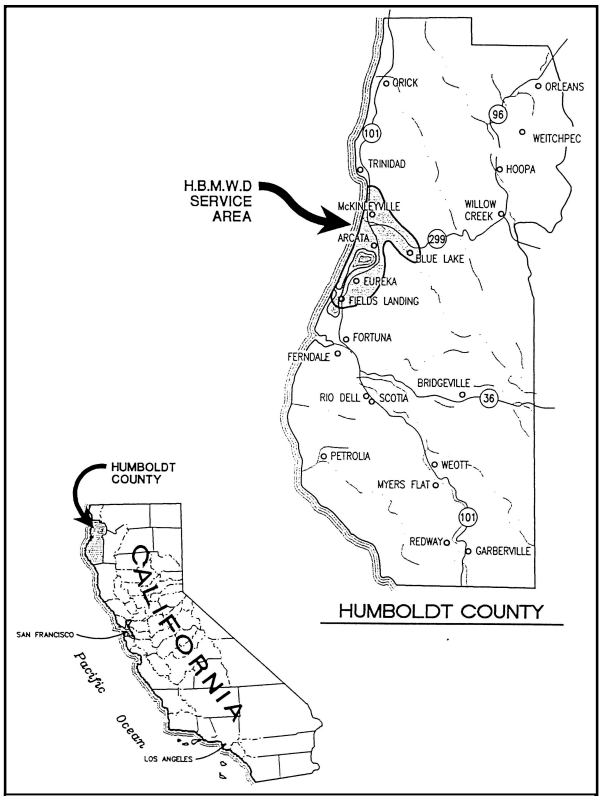

Figure 1 – District Service Area

Population-Current and Projected

The 2000 Census population for Humboldt County was 126,518. The Census Bureau estimates that from April 1, 2000 to July 1, 2003, the County's population has increased by 1.1% to 127,915, or approximately 0.4% per year. Starting with the 2000 Census figure, the County's population has been projected at a growth rate of 0.4% through the year 2030. Table 2 summarizes these projections in 5-year increments.

The District's service area population is approximately 60% of the population of Humboldt County. Starting with the 2000 Census figure, the District's population has been projected at 60% of the County's population through the year 2030 in 5-year increments (Table 2).

Table 2 – Population-Current and Projected

Service Area	2000	2005	2010	2015	2020	2025	2030
Humboldt County Population	126,518*	129,069	131,671	134,325	137,033	139,796	142,615
District Population (60% of County)	75,911	77,441	79,003	80,595	82,220	83,878	85,569

*Actual per 2000 Census

It is noted that the County of Humboldt is using the California Department of Finance population projections for its General Plan Update. While these projections are slightly higher than the Census Bureau projections in the early years, partly due to the annual date of reporting, they are almost identical by the year 2030.

Climate

Humboldt County's watersheds receive high annual rainfall. Rainfall at Eureka averages just under 40 inches per water year (October to September). At Ruth, in Trinity County, where the District operates the R.W. Matthews Dam and the Ruth Reservoir (Ruth Lake), average rainfall is just under 70 (69.8) inches per water year. Some mountainous areas within the region often receive more than 100 inches of rain per year.

Table 3 shows average monthly rainfall, temperatures, and evapotranspiration (ETo) for the Ruth area.

Rainfall and temperatures are from the Forest Glen weather data gathering station; the closest station to the Ruth area. This information is provided by the Western Regional Climate Center (WRCC) operated by the National Oceanic and Atmospheric Administration (NOAA) under the U.S. Department of Commerce. Data is for the period July 1, 1948 to July 31, 1985.

Evapotranspiration is from the statewide ETo Map and Table. This information is provided by the California Irrigation Management Information System (CIMIS) operated by the Office of Water Use Efficiency under the Department of Water Resources (DWR).

Table 3 – Climate

Month	Std Mo Avg ETo (Evapotranspiration) (Inches)	Average Rainfall (Inches)	Average Temperatures Min - Max (Fahrenheit)
Jan	1.9	12.5	26.4 – 45.1
Feb	2.2	9.8	29.5 – 51.5
Mar	3.7	9.2	30.7 – 56.0
Apr	4.8	4.5	32.9 – 63.5
May	5.3	1.6	37.8 – 72.9
Jun	5.7	0.6	43.3 – 82.5
Jul	5.6	0.2	46.4 – 91.4
Aug	5.3	0.4	45.3 – 90.6
Sep	4.2	1.1	41.0 – 84.4
Oct	3.4	3.4	35.5 – 70.2
Nov	2.4	9.2	31.7 – 53.3
Dec	1.9	11.4	28.3 – 45.2
Totals	46.3	63.9	35.7 – 67.2

3. Water Sources

The source of water distributed by the District is the Mad River. R.W. Matthews Dam, located at river mile 79, impounds water in Ruth Lake (Figure 2). The District manages releases from the dam to ensure sufficient supplies downstream throughout the year.

Figure 2 – R.W. Matthews Dam and Ruth Lake

At the District's Essex Operations Center located just northeast of Arcata, water is pumped for both municipal and industrial use. Municipal water is pumped from the gravel and sand beds beneath the Mad River by four wells, called Ranney wells (Figure 3), situated within the riverbed at depths ranging from approximately 60 to 90 feet. Surface water is diverted directly from the river for industrial use.

Figure 3 – Ranney Wells in Bed of Mad River

Water Quality

As discussed above, drinking water delivered by the District is drawn from wells located in the Mad River. These wells draw water from the sands and gravel of the aquifer located under the riverbed. The gravel and sands through which the water is drawn provides a natural filtration process which yields source water for the District's regional drinking water system that is of very high quality. Furthermore, the results from the District's ongoing water monitoring and testing program indicate that the District's water quality is very high, as has consistently been the case over the years.

The only water quality issue occasionally encountered by the District is turbidity. Generally, turbidity in the Ranney Well source water is very low and meets the turbidity standards set by the California Department of Health Services (DHS). However, during or following severe winter storm events, turbidity in the source water may rise beyond the standards set by DHS. Turbidity itself is not a health concern. However, in the late 1990s an extremely heavy "El Nino" rainy season caused a prolonged series of storms that raised turbidity in the source water to such a level that DHS became concerned that it could interfere with the disinfection process, and therefore, pose a threat to public health. In 1997, DHS directed all of the Public Water Systems in the Humboldt Bay area (the District and its wholesale municipal customers) to address the wintertime turbidity issue and to meet the turbidity standards established by DHS. The District initiated a process with its seven municipal customers to determine the most cost effective way to meet the State's requirement. The solution was to design and construct a regional Turbidity Reduction Facility (TRF). The TRF design capacity is 14 MGD in the wintertime and 21 MGD in the summertime. The TRF was completed in April 2003 and now operates during the winter storm season to reduce higher turbidities in accordance with the State's standards. On October 10, 2003, it was named the *Lloyd L. Hecathorn Turbidity Reduction Facility* in honor of a long-term (24 years) District Board member.

Source Water

The District has appropriative water rights permits from the State Water Resources Control Board through the year 2029 (the time-span for this plan) for surface water storage and diversion. Diversion is accomplished in different ways for different uses. For industrial customers, surface water is diverted directly from the Mad River. For municipal customers, the four Ranney Wells pump water from the groundwater aquifer which is then recharged by surface water from the Mad River. With respect to the State Drinking Water requirements, the DHS has classified the District as groundwater, and is not subject to surface water treatment regulations.

The District is in the process of conducting a Groundwater Study of the aquifer in the Essex Reach of the Mad River in the vicinity of the Ranney Wells. The site under study is the Mad River Groundwater Basin which is located in the North Coast Hydrologic Region. It is composed of the Mad River Lowland Subbasin (Basin #1-8.01) and the Dows Prairie Subbasin (Basin #1-8.02), as defined by DWR. There is no present or anticipated overdraft in the two subbasins. The specific location of the study is the Holocene River Channel Deposits in the Mad River Lowland Subbasin.

The purpose of the District's Groundwater Study is to meet the following goals:

- Improve understanding of basin hydrology.
- Understand interactions between collectors and influence of pumping on turbidity.
- Preserve and enhance the reliability of groundwater resources of the District.
- Ensure the long-term availability of high quality groundwater.

The Study is being conducted in accordance with Assembly Bill 3030 and will be used to produce the District's Groundwater Management Plan (GMP). Funding was provided by a DWR Local Groundwater Management Program Grant. The District has conducted several public input sessions, including two public hearings regarding its GMP. It is anticipated that the District will adopt its GMP by January 2006.

Supply

The District's water rights permits allow it to store and divert a combined 75 million gallons a day (MGD) from the Mad River. This totals 84,000 acre-feet per year (AFY), which represents 8.4% of the average annual runoff (1,002,000 AFY) of the Mad River Basin. Flows below the R.W. Matthews Dam must also be sufficient to provide for other water rights on the river which total 1,775 AFY.

Under an agreement with the California Department of Fish and Game and a requirement in the water rights permits, the District is also responsible for maintaining sufficient flows for the protection, propagation and preservation of fish and wildlife. While the flows required for fish and wildlife vary based on time of year and river conditions, the potential maximum is 46,000 AFY. Thus, the combined total of the District's water rights, other water rights, and flows required for fish and wildlife is 131,775 AFY, or approximately 13% of the average annual runoff for the watershed. The District's management of R.W. Matthews Dam ensures that these flows are available year round.

The City of Eureka maintains water rights on the Mad River equivalent to 5.8 MGD. Under an agreement between the District and the City, the deliveries from the District to the City are considered to be deliveries of the City's water, emanating from its own water rights, not those of the District. Deliveries to the City in excess of the City's water rights are considered deliveries of the District's water.

Because the District's supplies are determined by its water rights, the projected supply for the next 25 years is 75 MGD (84,000 AFY) as shown in Table 4.

Table 4 – Water Supplies-Current and Planned (AF/Y)

Water Supply Sources	2005	2010	2015	2020	2025	2030
Mad River Storage & Diversions	84,000	84,000	84,000	84,000	84,000	84,000

Table 5 (groundwater pumping rights) is not required as the basin in not adjudicated.

The amount of ground water pumped reflects production of/deliveries from the Ranney Wells which pump water from the groundwater aquifer which is then recharged by surface water from the Mad River under permit. Tables 6 and 7 reflect municipal water pumped in the past and projected for the future, respectively (Ref. Tables 12 and 13).

Table 6 – Amount of Groundwater Pumped (AF/Y)

Basin Name	**2000**	**2001**	**2002**	**2003**	**2004**
Mad River Lowland Subbasin	12,145	11,635	12,253	11,292	11,477
% of Total Water Supply	14.5%	13.9%	14.6%	13.4%	13,7%

Table 7 – Amount of Groundwater Projected to be Pumped (AF/Y)

Basin Name	**2010**	**2015**	**2020**	**2025**	**2030**
Mad River Lowland Subbasin	12,433	13,278	14,194	15,183	16,259
% of Total Water Supply	14.8%	15.8%	16.9%	18.1%	19.4%

4. Reliability of Supply

As stated above, the District's water rights to 75 MGD amount to 8.4% of the average annual runoff in the watershed. Other water rights and required flows for fish and wildlife amount to less than 5% of the average annual runoff. As this suggests, there would have to be a large shortfall in annual runoff for the water supply to be affected. Even faced with shortages in rainfall and runoff, the storage provided by R.W. Matthews Dam should allow the District to maintain supplies.

On average, Ruth Lake begins the water year on October 1 with 31,000 AF of water, 64% of its 48,000 AF capacity. Most rainfall in the area occurs between November and April. In every year but one since 1969, there has been at least one large storm during this period, bringing 4 to 9 inches of rain over a seven-day period. This is almost always sufficient to fill the reservoir to capacity. There has only been one water year (1976/77) in which the reservoir was not filled to capacity. The average reservoir volume on May 1 (the end of the usual rainy season) is 47,700 AF, over 99% of capacity. This storage allows the District to supplement low flows until the rains begin again in the fall. Seasonal or climatic shortages are only likely to occur after two consecutive rainy winter seasons with severely reduced rainfall and runoff (well below 50% of normal). This has not happened in the history of the District.

A historical perspective of the designed safe yield of Ruth Lake is attached.

Table 8 – Supply Reliability (AF/Y)

Mad River Source	Normal Water Year	Single Dry Water Year	Multiple Dry Year 1	Multiple Dry Year 2	Multiple Dry Year 3
Acre-Feet	1,002,000	165,000	571,800	371,300	283,500
% of Normal	100%	16%	57%	37%	28%

Table 9 – Basis of Water Year Data

Water Year Type	Base Year (s)	Historical Sequence
Normal Water Year		1963/64 – 2003/04
Single Dry Water Year	1976/77	
Multiple Dry Water Years	1989/90-1991/92	

Reliability Comparison

- **Normal Water Year**

  During a normal water year, the Ruth Lake area averages 69.8 inches of rainfall:

  - About 173,000 AF of water flow into the reservoir via the Mad River.
  - The average runoff for the watershed above the District's diversion facilities at Essex is 1,002,000 AFY.

- **Single Dry Water Year**

  The water year October 1976 through September 1977 was the driest recorded for the District, far drier than any other.

  - Rainfall in the Ruth area was 29 inches, or 41% of normal (69.8 inches).
  - Flows into the reservoir were 26,000 AF, or 15% of normal (173,000 AF).
  - The runoff for the watershed above the District's diversion facilities was 165,000 AF, or 16% of normal (1,002,000 AFY).
  - The average reservoir volume for the water year was 21,000 acre-feet, which is 44% of capacity (48,000 AF) and 52% of normal (40,700 AF).
  - The reservoir was drawn to 13,000 AF, or 27% of its capacity (48,000 AF) at the end of the water year.
  - Fall storms arrived in November 1977 and quickly refilled the reservoir.

  This water year was severely dry throughout the entire state of California and was a very exceptional year in the District's history:

  - In 32 years of records, it was the only year in which rainfall was less than 50% of normal (69.8 inches).
  - It was also the only year in which the reservoir was not filled to capacity.
  - Total flows into the reservoir via the Mad River were half the value of the next driest year.
  - Runoff for the watershed and average reservoir volume were each 60% of the next driest year.

- **Multiple Dry Water Years**

  The three water years between October 1989 and September 1992 represent the driest multiple years recorded for the District:

  - Rainfall for this period averaged 42 inches per year, or 60% of normal.
  - Of the three water years, the driest year for rainfall was water year

1990/1991 with 37 inches, or 53% of normal.

- Flows into Ruth Lake via the Mad River averaged 69,000 AFY, or 40% of normal (173,000 AFY).
- The runoff for the watershed above the District's diversion facilities was 371,300 AFY, or 37% of normal (1,002,000 AFY).
- Despite the diminished rainfall and runoff, rainfall was more than sufficient to refill the reservoir each year.
- Reservoir volume during this period averaged 37,000 AF which is 77% of capacity (48,000 AF) and 91% of normal (40,700 AF).

Inconsistent Water Sources

As seen from the discussion of water supplies above, the District's sole source of water (the Mad River) has been very consistent and there is no need to replace or supplement this source. Table 10 (inconsistency of supply) is not applicable.

5. Transfer and Exchange Opportunities

As mentioned in the previous section on water use, the District lost a major wholesale customer for its industrial water in 1993. Since that time, a number of parties have contacted the District expressing potential interest in the available water supply. Among these have been several water marketers, whose potential projects may involve the export of water out of the area.

Table 11 – Transfer and Exchange Opportunities (AF/Y)

Source Transfer Agency	Transfer or Exchange	Short Term	Proposed Quantities	Long Term	Proposed Quantities
TBD	Transfer	TBD	22,000	TBD	22,000

6. Water Use by Customer Type – Past, Current and Future

Past and Current Water Use

The District currently has long-term wholesale contracts in place to provide treated water for domestic use to seven municipalities (Table 13). The current 20-year contracts were entered into in 1999. UWMPs submitted by the District's wholesale municipal customers contain more detailed information about end water users. The District provides water to less than 200 retail customers. Currently, the District delivers an average of 11 MGD (12,000 AFY) of treated water to its wholesale and retail customers. However, peak daily demand in the summertime reaches 16 to 17 MGD. The domestic water system has a capacity of 21 MGD (23,500 AFY).

There is one long-term contract in place to provide raw water for industrial use. At this time, the Evergreen Pulp Mill is the District's only wholesale customer of industrial water. Deliveries of industrial water average 15 MGD (16,800 AFY). Prior to its closing in 1993, the Simpson Pulp Mill also purchased industrial water on a wholesale

basis from the District. When both mills were operating, deliveries of industrial water averaged 40 MGD. The industrial water system has a capacity of 60 MGD. The District has received inquiries from companies with a possible interest in contracting for the available industrial water. For purposes of this plan, the current average of 15 MGD has been used for all projections of industrial water demand. The establishment of additional wholesale contracts for industrial water would increase this demand.

As previously discussed, the District's source of water (the Mad River) will be able to reliably provide the 75 MGD (84,000 AFY) allocation to which the District has rights.

Future Water Use

The County of Humboldt is in the process of updating its General Plan. The County is trying to determine areas best suited for growth, given existing or potential infrastructure. With District input, the Humboldt County Department of Community Development Services has prepared a "Summary Report: City and District Water and Sewer Service Capacities in Humboldt County" (October 12, 2004). The purpose of this report is to provide for the review of "Urban Study Areas", areas where water and/or sewer systems exist or may be appropriate to consider. Two of the areas under consideration is the area served by the Humboldt CSD, and on the Samoa Peninsula. If development should occur in these areas, it would increase the demand for water. However, any substantial development in either of these two areas would require major infrastructure improvements on the Samoa Peninsula, including the District's water distribution system.

With District input, the County of Humboldt has proposed a 45-year redevelopment project which may include four small communities within the District's service area; Fields Landing (Humboldt CSD), Glendale (Fieldbrook CSD), Manila (Manila CSD) and Fairhaven (District). The last two are located on the Samoa Peninsula. If development should occur in these four areas, it would increase the demand for water. However, before development could occur, major infrastructure improvements would have to be made, including the District's water distribution system.

At some point, given the peak summer time demands for municipal water, the District will need additional supply capability from its Ranney Wells at Essex; and/or collectively the District and its municipal customers will need to consider additional storage. The District has embarked on a long-term strategic planning process, including an updated Capital Improvement Plan, which addresses infrastructure improvements. The District will continue to be involved in long range planning with its customers and the County.

Tables 12-15 show the current and projected water demand (data for 2000 is actual). Current annual total water use of 28,470 AFY is 2.8% of the average annual runoff (1,002,000 AFY) of the Mad River Basin.

Table 12 assumes no growth in the District's retail water usage. If redevelopment occurs in Fairhaven, the number of residential accounts may increase. However, any such increase will still result in a negligible increase in water use. At this time, not enough information is available to project specific growth.

Table 13 utilizes the projected needs of the District's four municipal customers who are preparing UWMPs. The assumed annual usage growth rate is 2% for Humboldt and

McKinleyville CSDs, and 1% for the cities of Arcata and Eureka. For the City of Blue Lake, Fieldbrook CSD and Manila CSD, the assumed annual usage growth rate is 0.4% (the Census Bureau estimated County growth rate as used in Table 2). The Humboldt CSD is able to purchase its water directly from the District and/or from the City of Eureka, which purchases its water directly from the District. Projections reflect Humboldt CSD purchasing all its wholesale water directly from the District. The City of Eureka projections were adjusted accordingly.

Table 14 assumes no growth in industrial water usage

Table 12 – Water Deliveries-Past, Current and Projected (AF/Y)

Water Use	**2000**	**2005**	**2010**	**2015**	**2020**	**2025**	**2030**
Residential Accounts	200	200	200	200	200	200	200
Total AF/Y	**783**	**600**	**600**	**600**	**600**	**600**	**600**

Table 13 – Sales to Other Agencies (AF/Y)

Agency	**2000**	**2005**	**2010**	**2015**	**2020**	**2025**	**2030**
Arcata, City of	2,787	2118	2,226	2,339	2,459	2,582	2,714
Blue Lake, City of	265	308	314	321	327	334	341
Eureka, City of	5,009	3,778	3,971	4,174	4,387	4,611	4,847
Fieldbrook CSD	220	234	239	243	248	253	258
Humboldt CSD	1,286	2,655	2,931	3,237	3,573	3,945	4,356
Manila CSD	166	136	138	141	144	147	150
McKinleyville CSD	1,629	1,833	2,014	2,223	2,456	2,711	2,993
Total AF/Y	**11,362**	**11,062**	**11,833**	**12,678**	**13,594**	**14,583**	**15,659**

Table 14 – Additional Water Uses and Losses (AF/Y)

Water Use	2000	2005	2010	2015	2020	2025	2030
Raw Water	**19,009**	**16,808**	**16,808**	**16,808**	**16,808**	**16,808**	**16,808**

Table 15 – Total Water Use (AF/Y)

Water Use	**2000**	**2005**	**2010**	**2015**	**2020**	**2025**	**2030**
Table 12	783	600	600	600	600	600	600
Table 13	11,362	11,062	11,833	12,678	13,594	14,583	15,659
Table 14	19,009	16,808	16,808	16,808	16,808	16,808	16,808
Total AF/Y	**31,154**	**28,470**	**29,241**	**30,086**	**31,002**	**31,991**	**33,067**

7. Demand Management Measures

The area served by the District is one of the few regions of California with a local abundance of water. This has meant that droughts, while just as severe climatically, have not led to the same level of supply shortfall as in many other regions.

This does not mean that the District or its residents are unaware or unconcerned about the importance of water conservation. In fact, per capita use of water in the area is below national and state averages. Current production of treated drinking water for municipal purposes averages 11 MGD. With a population of approximately 77,400, this translates to 142 gallons per capita per day (GPCD). This municipal use includes residential, commercial, industrial and agricultural uses of the water. According to the DWR California Water Plan Update Bulletin 160-98 (November 1998), this use is well below the state average of 229 GPCD for all uses. Further, the Bulletin projects that by the year 2020, the state's average use increases to 243 GPCD without conservation; and decreases to 215 GPCD with conservation. Per capita water use rates in this region likely benefit greatly from the moderate climate and abundant rainfall, as needs for agriculture and landscaping are often met with rainfall rather than municipal water.

Because supplies are sufficient to meet current and projected demand and per capita use is low, implementing additional Demand Management Measures (DMMs) is not economic. The benefits of many programs would be negligible and greatly outweighed by the costs of their implementation. The District has implemented several DMMs discussed in the following section.

<u>Implemented or Scheduled to be Implemented</u>

- **Distribution System Water Audits, Leak Detection, and Repair**

  The District has meters on all services and sources. Analog meters at the wholesale customers' delivery points are read monthly. Totalizers connected to the District's control system measure and record production rates as well as delivery rates to all wholesale customers. These readings are taken continuously and are monitored at all times by the District's Water Plant Operators. Large differences between production volumes and the total volume delivered to customers are immediately obvious and are addressed. Furthermore, totalizer readings and analog meter readings are compared each month and discrepancies addressed. Analyses have been made of the data from the production totalizers, the wholesale customer delivery totalizers, and the analog meters at the wholesale customers' delivery points. All readings were within 10% of one another, which is not significant, especially considering that each meter and totalizer used has an accuracy tolerance of 2% to 5%. Further, this analysis showed that unaccounted water is consistently less than 10% of production, the American Water Works Association standard for distribution systems.

  The control system, by making data available in real time, not only helps the District detect problems in its distribution system, it can benefit municipal customers as well. For example, one of the municipal customers developed a

large leak in their pipeline in between the District's delivery point and the municipality's storage reservoir. A tremendous spike in the delivery rate to the municipality developed rapidly and was noticed by the District's Water Plant Operator, resulting in earlier detection of the leak than might otherwise have occurred. The District will continue to monitor production and delivery rates at all times and immediately investigate significant discrepancies.

- **Public Information Programs**

  The District supports initiatives to inform the public about water conservation. Financial contributions are made regularly to the California Water Awareness Campaign and the Water Education Foundation (WEF). As part of the WEF's Water Awareness Month, the District has co-sponsored radio public service announcements with water awareness and water conservation messages. In the future, the District will continue these efforts to raise public awareness of water conservation issues in a similar manner.

- **School Education Programs**

  Local schools have many resources besides drinking water available to them from the District. In the past, the District has purchased educational materials from the WEF for donation to the Humboldt County Office of Education for use in schools throughout the county. Additional materials with general water awareness, as well as water conservation content, are available from the District and are distributed to instructors as well as to students undertaking water-related projects.

  District personnel at the Essex Operational Center give tours of the water production and treatment facilities to students. These tours have varied from the most basic water awareness talks for kindergarten classes to technical presentations for graduate engineering classes. Personnel have also assisted individual high school and university students with their projects relating to either the water system or the Mad River.

  The District enjoys the opportunity to work with students as it is rewarding to all involved and helps to disseminate awareness of water as a valuable resource. These activities will be continued in a similar manner.

- **Wholesale Agency Programs, Conservation Pricing, and Water Conservation Coordinator**

  Due to the nature of the District's contracts with its wholesale customers in which they all pay a proportionate share of the total cost of the regional system based on their water consumption, these DMMs have not been implemented. They will be considered for implementation in future customer contract negotiations.

8. Evaluation of DMMs Not Implemented

As stated previously, additional DMMs are not economic given the regional supply and demand situation. Furthermore, as a wholesale water provider, the District does not

directly implement measures targeting end water users. The District has no direct authority to implement the following:

- Water survey programs for single and multi-family residential customers
- Residential plumbing retrofit
- Metering with commodity rates for all new and retrofit connections
- Large landscape conservation programs and incentives
- High-efficiency washing machine rebate programs
- Conservation programs for commercial, industrial, and institutional accounts
- Residential ultra-low-flush toilet replacement programs

Table 16 (Evaluation of Unit Cost of Water that would Result from Non-implemented DMMs and Planned Water Supply Project and Programs) is not applicable.

9. Planned Water Supply Projects and Programs

As previously discussed, the District has an abundance of water to supply its customers during normal, single dry year, and multiple dry years. Therefore, no new water supply projects are planned nor deemed necessary at this time. Table 17 (water supply projects-future) is not applicable.

10. Development of Desalinated Water

Due to the abundant fresh water supply, development of desalinated water is not a necessary or cost effective option for the District. Table 18 (desalinated water) is not applicable.

11. Current or Projected Supply Includes Wholesale Water

The District is a water wholesaler; and does not receive any water from wholesalers. Tables 19, 20, 21 & 22 are not applicable.

Section 3 – Determination of DMM Implementation

Please refer to Section 2, Step 7 (Demand Management Measures) above which discusses the District's implementation or scheduled implementation of water demand activities.

Section 4 – Water Shortage Contingency Plan

Plan Overview and Coordination

Overview

The District provides potable water on a wholesale basis to the cities of Arcata, Eureka, and Blue Lake; and to the Humboldt, Manila, Fieldbrook and McKinleyville Community Services Districts. Retail water service is provided to less than 200 customers who are generally located closer to the District's distribution system than to any other municipal water service. Raw water for industrial use is provided to the pulp mill located on the Samoa Peninsula and operated by Evergreen Pulp, Inc.

Wholesale water is provided to the District's customers under long-term contracts. These contracts specifically assert the District's right, in accordance with the California Water Code, to suspend the water delivery requirements of the contracts if the District's Board declares that an actual or potential water shortage exists, or if all wholesale customers and the District mutually agree to implement this Water Shortage Contingency Plan.

During the 76/77 drought, which was the only declared water emergency in the history of the District, it was the policy and practice of the District to set maximum use targets for its wholesale municipal customers, allowing them to choose how to meet those targets. Since the wholesale industrial customers could not operate effectively at significantly reduced water consumption levels, they were required to repair leaks and increase the efficiency of their water use. A reservoir capacity was set at which all deliveries to the industrial customers would cease. Fortunately, capacity did not fall to that level.

This plan operates on the same principles. The municipalities will retain responsibility for control of allotments provided under the provisions of this plan. The wholesale industrial customers will face the reductions outlined in each action stage. The District's 200 retail customers will be treated in accordance with the action stages of this plan.

Coordination

Coordination in implementing this Water Shortage Contingency Plan is assured through the activation of a Drought Committee. The first Drought Committee was formed in 1977. This committee would be convened as necessary to address drought conditions or other significant events which could result in a supply shortfall. It is composed of representatives of the District and each of its wholesale customers. The committee's responsibilities include:

1. Review the status of the water supply and forecasts.
2. Recommend specific actions in accordance with this plan and each entity's own water shortage plan.
3. Assure that priority of allocations meets legal requirements of consistency and non-discrimination.
4. Coordinate media releases and public announcements.
5. Coordinate interaction with regulatory agencies such as the California Departments of Water Resources, Fish and Game, and Health Services.
6. Review and make recommendations about requests for waivers from, or exceptions to, actions taken pursuant to this plan.

1. Stages of Action

There are five defined drought action stages. These stages may be implemented with or without a formal declaration of a water emergency by the District's Board of Directors. In the event circumstances merit or require a declaration of a water shortage emergency, it is the intent of the District to rely on this plan to provide the primary framework to deal with such an emergency. The triggers attached to each stage are not intended to be absolute. Circumstances not currently foreseeable may dictate moving to a higher action stage before the trigger levels for that stage are reached. Conversely, action stage implementation may be postponed or suspended if there is sufficient natural flow in the river to meet downstream needs. Action stages will be terminated, in consultation with the Drought Committee, as rain, runoff, and lake levels permit.

Stages and Conditions

Table 23 - Water Supply Shortage Stages and Conditions

Stage No.	Water Supply Conditions	% Shortage
Stage 1	Controlled Release from Storage	
Stage 2	Optimizing Available Supply	
Stage 3	General Reduction	10% to 15%
Stage 4	Usage Allocations	16% to 30%
Stage 5	Rationing	50%

- **Stage 1 – Controlled Release from Storage**

  This means releasing from storage only the amount of water needed for instream and water supply purposes.

- **Stage 2 – Optimizing Available Supply**

  Reduction of peaking by wholesale industrial customers, resulting in narrower production ranges and a lower flow requirement in the river.

  General voluntary water conservation measures with the municipalities, including public education efforts encouraging water conservation.

  Consideration to implement Stage 2 will be triggered when the volume in Ruth Lake falls to 65% of capacity (31,200 AF) and the accumulated rainfall in the Ruth area is 70% or less of the historical average (49 inches). Other triggers to be considered are damage to system by flood, earthquake or other destruction; and accidental or intentional toxic spills in supply. The Drought Committee will review the trigger data and make recommendations regarding actual implementation of Stage 2.

- **Stage 3 – General Reduction**

  All wholesale and retail customers of the District will be required to reduce usage by 10% to 15% over the previous two-year average actual use. It is estimated that this will save between 2.7 MGD and 4.0 MGD, or up to 370 AF per month, based on current actual usage.

  Consideration to implement Stage 3 will be triggered when Ruth Lake reaches 40% of capacity (19,200 AF) and accumulated rainfall is 60% or less of historical average (42 inches). The Drought Committee will review the trigger data and provide input regarding actual implementation of Stage 3.

- **Stage 4 – Usage Allocations**

  Wholesale industrial water usage will be limited to a maximum of 80% of the previous two years of actual average use. Each wholesale industrial customer will provide certification that water use is being optimized and that wasteful use of water is not occurring.

  Use allocations reflecting 16% to 30% reductions will be established for the municipalities and retail customers using the previous two years actual average usage. The specific reduction will be determined on a biweekly basis based on rate of supply reduction, weather and other relevant factors. It is estimated that this will save between 4.0 MGD and 6.6 MGD, or up to 610 AF per month over current usage.

  Consideration to implement Stage 4 will be triggered when Ruth Lake reaches 30% of capacity (14,400 AF) and accumulated rainfall is 50% or less of historical average (35 inches). The Drought Committee will review the trigger data and provide input regarding actual implementation of Stage 4.

- **Stage 5 – Rationing**

  Wholesale industrial water usage will be limited to the amounts required for human consumption, sanitation, and fire protection. No water will be available for industrial processes. Municipal and retail customer usage will be reduced on a basis of up to 50% as may be determined by the rate of use of available supply and weather conditions. It is estimated that this will save up to 21 MGD, or 1,930 AF per month over current usage.

  Consideration to implement Stage 5 will be triggered when Ruth Lake reaches 25% of capacity (12,000 AF) and accumulated rainfall for the Ruth area continues at 50% or less of historical average (35 inches). The Drought Committee will review the trigger data and provide input regarding the actual implementation of Stage 5.

<u>Projected Effect of Action Stages on Water Supply Durability</u>

A primary goal of any Water Shortage Contingency Plan is to ensure, to the greatest extent possible, that the water supply will last until it can be replenished. To examine how well this plan might achieve that goal, some supply duration analyses have been performed. These analyses compare how long the water supply in the reservoir will last

both with and without implementation of the plan. The calculations assume that no rainfall or other inflows to the reservoir occur and do not take into account minimum releases required for fish and wildlife, as these vary throughout the year. Flows for other water rights on the river are included; these total 1.585 MGD. Also, the calculations assume that the action stages are put into effect as soon as the reservoir volume trigger point is reached and that the maximum reductions for each stage are implemented.

The analyses compute the number of days the supplies would last starting from the Stage 2 trigger point, which is the lake reaching 65% of capacity (31,200 AF). If no reductions were made and the current delivery level of 27 MGD was maintained, this supply would last 352 days.

If the plan were followed as described above, the various stages would be implemented as follows:

- Stage 2 would be implemented immediately. This stage doesn't require any reductions; deliveries would be maintained at the current level of 27 MGD.
- Stage 3 would be reached on day 136 when the reservoir reached 40% of capacity (19,200 AF). This would lead immediately to 15% reductions to both municipal and industrial customers. This would reduce the production rate to 23 MGD.
- Stage 4 would be reached on day 199 when the reservoir reached 30% of capacity (14,400 AF). This would lead immediately to 30% reductions in municipal deliveries and 20% reductions in industrial deliveries. This would reduce the production level to 21 MGD.
- Stage 5 would be reached on day 235 when the reservoir reached 25% of capacity (12,000 AF). This would lead immediately to 50% reductions in municipal deliveries and reduce industrial water usage to amounts required for human consumption, sanitation, and fire protection (called 95% reduction for this analysis). This would reduce the production level to 8 MGD.
- Once in Stage 5, the supplies would last another 493 days, running out on day 728.

So, in this analysis, the duration of supplies is more than doubled (from 352 days to 728 days) through the implementation of this Water Shortage Contingency Plan. An increase in normal water deliveries, especially the District's entry into additional wholesale contracts for industrial water, would reduce the duration of the supplies. However, the proportional increase in the duration of supplies afforded by the plan stays about the same. For example, if normal industrial deliveries totaled 30 MGD instead of the current 15 MGD, the supplies would last for 238 days without any demand restrictions and 613 days with the restrictions outlined in the plan.

2. Estimate of Minimum Supply for Next Three Years

Even during the three multiple dry water years 1989/90 through 1991/92, the District still had its entire permitted supply of 84,000 AFY available during consecutive three years. As shown in Table 24, the minimum water supply available during consecutive three years will also be 84,000 AFY; which far exceeds the projected demand for water.

Table 24 – Three-Year Estimated Minimum Water Supply (AF/Y)

Source	Year 1	Year 2	Year 3	Normal
Mad River	84,000	84,000	84,000	84,000

3. Catastrophic Supply Interruption Plan

The District's Emergency Operations Plan (EOP) provides the overall response procedures for catastrophic supply interruptions. The EOP further provides specific procedures for power outages and for security incidents. The District's Emergency Action Plan (EAP) provides response procedures for catastrophic supply interruptions involving the R.W. Matthews Dam and Reservoir (Ruth Lake) at Ruth, such as an earthquake. The District's Operations Plan (OP) provides procedures for system failures. Hazardous materials incidents are covered by numerous response plans depending on the nature of the incident.

Table 25 - Preparation Actions for a Catastrophe

Possible Catastrophe	Summary of Actions/Plans
Regional Power Outage	Emergency Operations Plan-Power Outage Procedures
System Failure	Operations Plan for Water Supply, Treatment, and Distribution System
Earthquake	Emergency Operations Plan/ Emergency Action Plan (R.W. Matthews Dam at Ruth)
Hazardous Material Spill	Hazardous Materials Response Plans
Acts of Terrorism	Emergency Operations Plan-Security Procedures/ Emergency Action Plan (R.W. Matthews Dam at Ruth)

4. Prohibitions, Consumption Reduction Methods, and Penalties

As noted earlier in this plan, each wholesale customer is responsible for adopting plans to implement the reductions in water use called for by the action stages outlined above. The District's Board of Directors reserves the right to adopt penalties for non-compliance with various action stages, but feels it is not necessary to do so at this time. Penalties will be considered when a water shortage emergency is actually declared. Effectiveness of this plan will be monitored on a daily basis using continuously metered data from Ruth Lake and the metered connections to all wholesale municipal and industrial customers. Tables 26 (prohibitions), 27 (consumption reduction methods), and 28 (penalties) are not necessary at this time.

5. Analysis of Revenue Impacts of Reduced Sales During Shortages

Each wholesale customer must gage the revenue and expenditure impact of the action stages. The expenditure and revenue impacts on the District are negligible since the wholesale rates are designed to cover costs incurred by the District in producing and distributing the water. Expenditures and revenues for costs directly related to the amount of water produced (e.g. costs for power for pumping) will both decrease as deliveries of water are curtailed. Tables 29 (revenue impacts) and 30 (expenditure impacts) are not applicable.

6. Draft Ordinance and Use Monitoring Procedure

To determine the actual reductions in use of water during a water shortage, the District will use its Supervisory Control and Data Acquisition (SCADA) system to monitor distribution to its customers on a daily basis.

Table 31 – Water Use Monitoring Mechanisms

Mechanisms for Determining Reductions	Type and Quality of Data Expected
Monitoring Daily Distribution Records	SCADA Data is High Quality

A copy of the District's draft Water Shortage Contingency Resolution for declaring a Water Shortage Emergency and implementing the District's Water Shortage Contingency Plan is attached to the District's UWMP.

Section 5 – Recycled Water Plan

The District is a regional water wholesaler and does not operate or have any authority over wastewater collection and treatment in the area. Several municipal customers who will be submitting Urban Water Management Plans provide both water and sewer services to their customers. Information about these systems and their water recycling programs may be found in their plans. Steps 1, 2, 3 and Tables 32, 33, 34, 35, 36, 37, and 38 are not applicable to this District.

Section 6 – Water Quality Impacts on Reliability

As discussed in Section 2, Step 3 (Water Sources), the District has a very reliable source and supply of very high quality water. The District does not expect water quality to affect its water management strategies or its supply reliability. Table 39 (water supply changes due to water quality-current and projected) is not applicable.

Section 7 – Water Service Reliability

1. Projected Normal Water Year Supply and Demand

Table 40 – Projected Normal Water Year Supply (AF/Y)

	2010	2015	2020	2025	2030
Supply (by Permit)	84,000	84,000	84,000	84,000	84,000
% of Normal Year for Permit	100.0%	100.0%	100.0%	100.0%	100.0%
% of Normal Year for Basin (1,002,000 AF/Y)	8.4%	8.4%	8.4%	8.4%	8.4%

Table 41 – Projected Normal Water Year Demand (AF/Y)

	2005	2010	2015	2020	2025	2030
Demand	28,470	29,241	30,086	31,002	31,991	33,067
% of Year 2005	100.0%	102.7%	105.7%	108.9%	112.4%	116.1%

Table 42 – Projected Normal Year Supply and Demand Comparison (AF/Y)

	2010	2015	2020	2025	2030
Supply Totals	84,000	84,000	84,000	84,000	84,000
Demand Totals	29,241	30,086	31,002	31,991	33,067
Difference (supply minus demand)	54,759	53,914	52,998	52,009	50,933
Difference as % of Supply	65.2%	64.2%	63.1%	61.9%	60.6%
Difference as % of Demand	184.0%	179.2%	171.0%	162.6%	154.0%

2. Projected Single Dry Year Supply and Demand Comparison

Table 43 – Projected Single Dry Year Water Supply (AF/Y)

	2010	2015	2020	2025	2030
Supply (by Permit)	84,000	84,000	84,000	84,000	84,000
% of Projected Normal for Permit	100.0%	100.0%	100.0%	100.0%	100.0%
% of Single Dry Year for Basin (165,000 AF/Y)	50.9%	50.9%	50.9%	50.9%	50.9%

Table 44 – Projected Single Dry Year Water Demand (AF/Y)

	2010	2015	2020	2025	2030
Demand	29,241	30,086	31,002	31,991	33,067
% of Projected Normal	100%	100%	100%	100%	100%

Table 45 – Projected Single Dry Year Supply and Demand Comparison (AF/Y)

	2010	2015	2020	2025	2030
Supply Totals	84,000	84,000	84,000	84,000	84,000
Demand Totals	29,241	30086	31,002	31,991	33,067
Difference (supply minus demand)	54,759	53,914	52,998	52,009	50,933
Difference as % of Supply	65.2%	64.2%	63.1%	61.9%	60.6%
Difference as % of Demand	184.0%	179.2%	171.0%	162.6%	154.0%

3. Projected Multiple Dry Year Supply and Demand Comparison

Table 46 – Projected Supply during Multiple Dry Year Period Ending 2010 (AF/Y)

	2006	2007	2008	2009	2010
Supply (by Permit)	84,000	84,000	84,000	84,000	84,000
% of Projected Normal for Permit	100%	100%	100%	100%	100%

Table 47 – Projected Demand during Multiple Dry Year Period ending in 2010 (AF/Y)

	2006	2007	2008	2009	2010
Demand	28,621	28,775	28,931	29,090	29,241
% of Projected Normal	100%	100%	100%	100%	100%

Table 48 – Projected Supply & Demand Comparison during Multiple Dry Year Period Ending in 2010 (AF/Y)

	2006	2007	2008	2009	2010
Supply Totals	84,000	84,000	84,000	84,000	84,000
Demand Totals	28,621	28,775	28,931	29,090	29,241
Difference (supply minus demand)	55,379	55,225	55,069	54,910	54,759
Difference as % of Supply	65.9%	65.7%	65.6%	65.4%	65.2%
Difference as % of Demand	193.5%	191.9%	190.3%	188.8%	187.3%

Table 49 – Projected Supply during Multiple Dry Year Period Ending in 2015 (AF/Y)

	2011	2012	2013	2014	2015
Supply (by Permit)	84,000	84,000	84,000	84,000	84,000
% of Projected Normal for Permit	100%	100%	100%	100%	100%

Table 50 – Projected Demand during Multiple Dry Year Period Ending in 2015

	2011	2012	2013	2014	2015
Demand	29,405	29,571	29,740	29,912	30,086
% of Projected Normal	100%	100%	100%	100%	100%

Table 51 – Projected Supply & Demand Comparison during Multiple Dry Year Period Ending in 2015 (AF/Y)

	2011	2012	2013	2014	2015
Supply Totals	84,000	84,000	84,000	84,000	84,000
Demand Totals	29,405	29,571	29,740	29,912	30,086
Difference (supply minus demand)	54,595	54,429	54,260	54,088	53,914
Difference as % of Supply	65.0%	64.8%	64.6%	64.4%	64.2%
Difference as % of Demand	185.7%	184.1%	182.4%	180.8%	179.2%

Table 52 – Projected Supply during Multiple Dry Year Period Ending in 2020 (AF/Y)

	2016	2017	2018	2019	2020
Supply (by Permit)	84,000	84,000	84,000	84,000	84,000
% of Projected Normal	100%	100%	100%	100%	100%

Table 53 – Projected Demand during Multiple Dry Year Period Ending in 2020 (AF/Y)

	2016	2017	2018	2019	2020
Demand	30,263	30,443	30,626	30,812	31,001
% of Projected Normal	100%	100%	100%	100%	100%

Table 54 – Projected Supply & Demand Comparison during Multiple Dry Year Period Ending in 2020 (AF/Y)

	2016	2017	2018	2019	2020
Supply Totals	84,000	84,000	84,000	84,000	84,000
Demand Totals	30,263	30,443	30,626	30,812	31,001
Difference (supply minus demand)	53,737	53,557	53,374	53,188	52,999
Difference as % of Supply	64.0%	63.8%	63.5%	63.3%	63.1%
Difference as % of Demand	177.6%	175.9%	174.3%	172.6%	171.0%

Table 55 – Projected Supply during Multiple Dry Year Period Ending in 2025 (AF/Y)

	2021	2022	2023	2024	2025
Supply (by Permit)	84,000	84,000	84,000	84,000	84,000
% of Projected Normal for Permit	100%	100%	100%	100%	100%

Table 56 – Projected Demand during Multiple Dry Year Period Ending in 2025 (AF/Y)

	2021	2022	2023	2024	2025
Demand	31,193	31,388	31,586	31,787	31,992
% of Projected Normal	100%	100%	100%	100%	100%

Table 57 – Project Supply & Demand Comparison during Multiple Dry Year Period Ending in 2025 (AF/Y)

	2021	2022	2023	2024	2025
Supply Totals	84,000	84,000	84,000	84,000	84,000
Demand Totals	31,193	31,388	31,586	31,787	31,992
Difference (supply minus demand)	52,807	52,612	52,414	52,213	52,008
Difference as % of Supply	62.9%	62.6%	62.4%	62.2%	61.9%
Difference as % of Demand	169.3%	167.6%	165.9%	164.3%	162.6%

Table 58 – Projected Supply during Multiple Dry Year Period Ending in 2030 (AF/Y)

	2026	2027	2028	2029	2030
Supply (by Permit)	84,000	84,000	84,000	84,000	84,000
% of Projected Normal for Permit	100%	100%	100%	100%	100%

Table 59 – Projected Demand during Multiple Dry Year Period Ending in 2030 (AF/Y)

	2026	2027	2028	2029	2030
Demand	32,200	32,411	32,626	32,845	33,067
% of Projected Normal	100%	100%	100%	100%	100%

Table 60 – Project Supply & Demand Comparison during Multiple Dry Year Period Ending in 2030 (AF/Y)

	2026	2027	2028	2029	2030
Supply Totals	84,000	84,000	84,000	84,000	84,000
Demand Totals	32,200	32,411	32,626	32,845	33,067
Difference (supply minus demand)	51,800	51,589	51,374	51,155	50,933
Difference as % of Supply	61.7%	61.4%	61.2%	60.9%	60.6%
Difference as % of Demand	160.9%	159.2%	157.5%	155.7%	154.0%

Section 8 – Adoption and Implementation of UWMP

The District has made its 2005 UWMP available for public review and held a public hearing to receive public input. The District notified its municipal and industrial wholesale customers, the community served, and the County of Humboldt of the time and place of the public hearing.

A copy of the Certificate of Publication of the Legal Notice of Public Hearing is attached.

A copy of the District's Board Agenda Notice of Public Hearing is attached.

A copy of the resolution adopting the District's 2005 UWMP is attached.

Within 30 days of adoption, the District's 2005 UWMP will be provided to the DWR, California State Library, County of Humboldt, and the cities and community services districts within its service area.

Within 30 days of filing with the DWR, the District will once again make its 2005 UWMP available for public review.

Within 30 days of adoption, the District will file copies of any amendments or changes to its 2005 UWMP with the DWR, California State Library, County of Humboldt, and the cities and community services within its service area.

STATE OF CALIFORNIA – CALIFORNIA NATURAL RESOURCES AGENCY

EDMUND G. BROWN JR., *Governor*

DEPARTMENT OF WATER RESOURCES
1416 NINTH STREET, P.O. BOX 942836
SACRAMENTO, CA 94236-0001
(916) 653-5791

January 17, 2012

H.B.M.W.D. JAN 2 0 2012

Ms. Carol Rische
General Manager
Humboldt Bay Municipal Water District
Post Office Box 95
Eureka, California 95502-0000

Dear Ms. Rische:

The Department of Water Resources (DWR) has reviewed the Humboldt Bay Municipal Water District's (HBMWD) 2010 Urban Water Management Plan (UWMP) received on July 1, 2011. The California Water Code (CWC) directs DWR to report to the legislature once every five years on the status of submitted plans. In meeting this legislative reporting requirement, DWR reviews all submitted plans.

DWR's review of HBMWD's 2010 plan has found that the plan has addressed the requirements of the CWC. DWR's review of plans is limited to assessing whether suppliers have addressed the required legislative elements. In its review, DWR does not evaluate or analyze the supplier's UWMP data, projections, or water management strategies. This letter simply acknowledges that HBMWD's UWMP has addressed these requirements. The results of the review will also be provided to DWR's Financial Assistance Branch.

If you have any questions regarding the review of the plan or urban water management planning please don't hesitate to email or call.

Sincerely,

Peter Brostrom
UWMP Program Manager
brostrom@water.ca.gov
(916) 651-7034

cc: Jessica Salinas Brown
DWR Northern Regional Office

Betsy Vail
DWR Water Use & Efficiency Branch