112 WATER SHORTAGE PLAN

112.1 INTRODUCTION

112.1.1 The purpose of the Water Shortage Plan is to provide a systematic response to managing system demands so customers do not experience pressure, quality, or availability issues during periods of extreme water demand or during other times when water availability may be limited due to other events, such as raw water shortage, water quality events, or system failures.

Urbandale Water Utility (UWU) purchases all of its water from Des Moines Water Works (DMWW). As a result, this plan will mirror very closely to the DMWW plan in the event of a regional water shortage and provide for a local strategy in the event of a Urbandale water shortage. If the event only affects the Urbandale system, the stages, triggers, and goal deduction percentages will be the same but be based on the "current capacity" (CC) of the UWU's ability to provide water.

This plan provides four stages of response based on the increasing severity as conditions warrant. The stages of this plan are not necessarily consecutive. When a water shortage occurs the stage deemed most appropriate for the conditions will be implemented.

Stage I	Voluntary 25% reduction in turf irrigation
Stage II	Voluntary 50% reduction in outdoor water use including turf irrigation
Stage III	Mandatory all turf irrigation is prohibited
Stage IV	Water rationing for all consumption

The goal at each stage in the plan is to reduce system demands to 85% or less of the CC to provide safe drinking water, as defined in this plan.

Nominal capacity of the DMWW's system is 100 MGD. Winter demand, in a typical year, averages approximately 40 MGD and during the summer heavy irrigation causes spikes in demand which can reach more than 95 MGD. Based on historic consumption patterns, irrigation, primarily turf irrigation, accounts for as much as 40 MGD of demand during heavy irrigation periods.

112.2 CURRENT CAPACITY TO PROVIDE SAFE DRINKING WATER AND EXPECTED PEAK DEMAND

112.2.1 The current capacity (CC) to provide safe drinking water on any day is defined as the amount of water DMWW or the UWU can deliver on any day, taking into consideration raw water availability and quality, seasonal treatment efficacy, and any mechanical or operational issues on that given day. The number will vary seasonally and may vary day to day depending on specific water quality and operational conditions. CC is computed as the sum of the daily capacities of either DMWW or the UWU to provide water depending upon whether the shortage is a Regional or a local shortage which may be expressed in the following formulas.

Regional Shortage - DMWW Treatment Facilities

CC Total = CC Fleur + CC McMullen + CC Saylorville

Local Shortage - UWU Connections

CC Total = CC UBS + CC Louis Moon Station + CC Other Master Connections

112.3 STAGE I: VOLUNTARY 25% REDUCTION IN TURF IRRIGATION

112.3.1 TRIGGER

During a period of substantial irrigation demand, when Expected Peak Demand reaches 90% of Current Capacity or system demand is generating a high number of areas with low pressure, or there are other indications that without wise usage of water, a shortage could occur.

112.3.2 ANTICIPATED IMPACT

It is anticipated that Stage I will most likely be triggered during peak irrigation season. In a typical year, irrigation can account for as much as 40 MGD of demand on a peak day. If this is the case, a 25% reduction in irrigation will result in a total demand reduction of 10 MGD. At a peak demand of 10 MGD, the results would be more than a 10% reduction.

112.3.3 GOAL

A 10% reduction in system demands as compared to Expected Peak Demand.

112.3.4 ACTION

112.3.4.1 Request a **25%** reduction in lawn irrigation.

112.3.4.2 Encourage customers to optimize their irrigation systems so water is not directed onto impervious surfaces and turf is not overwatered.

112.3.4.3 Recommend customers irrigate on alternate days, by a system under which even numbered addresses water only on even days of the month, and odd-numbered addresses water only on odd-numbered days of the month.

112.3.4.4 Suspend all hydrant flushing other than the Utility has deemed necessary such as for water quality purposes.

112.3.4.5 Request that City officials minimize high water use activities such as street sweeping and Fire Training exercises.

112.3.5 ENFORCEMENT

There will be no enforcement at this stage.

112.4 STAGE II: VOLUNTARY 50% REDUCTION IN OUTDOOR WATER USE (INCLUDING TURF IRRIGATION)

112.4.1 TRIGGER

During a period of substantial irrigation demand, after Stage I has been implemented and failed to achieve an adequate reduction in consumption, when Expected Peak Demand exceeds 90% of Current Capacity, or system demand continues to generate areas of low pressure, or there are other indications that without further reductions in demand, a shortage could occur.

112.4.2 ANTICIPATED IMPACT

It is anticipated that Stage II will most likely be triggered during the peak outdoor water use season. In a typical year, outdoor water use including irrigation can account for as much as 50 MGD of demand on a peak day. If this is the case, a 50% reduction in outdoor water use will result in a 25 MGD reduction in total demand. At peak demand 25 MGD would be more than a 25% reduction.

112.4.3 GOAL

A 25% reduction in system demands as compared to Expected Peak Demand.

112.4.4 ACTION

Request customers further reduce water consumption by taking the following measures in addition to those implemented in Stage I:

112.4.4.1 Request a **50%** reduction in outdoor water use.

112.4.4.2 Remind customers to optimize their irrigation systems so water is not directed onto impervious surfaces and turf is not overwatered.

112.4.4.3 Reinforce the recommendation for customers to irrigate on alternate days.

112.4.4.4 Encourage wise use of water during outdoor activities including washing cars, playing in the sprinkler, playing with water toys, and filling swimming pools or hot tubs.

112.4.4.5 Encourage wise use of water indoors including identifying and repairing leaking fixtures, washing only full loads in dishwashers and washing machines, shorter showers, etc.

112.4.4.6 Coordinate with wholesale customers to ensure they are relaying the same message.

112.4.4.7 Request that public agencies (City, County, or State) set an example by:

a) Closing recreational facilities with known water inefficiencies.

b) Suspend the operation of decorative fountains.

112.4.5 ENFORCEMENT

There will be no enforcement at this stage.

112.5 STAGE III: MANDATORY ALL TURF IRRIGATION IS PROHIBITED

112.5.1 TRIGGER

During a period of substantial irrigation demand, after Stage I and Stage II have been implemented and failed to achieve an adequate reduction in consumption, when Expected Peak Demand exceeds 90% of Current Capacity, or system demand continues to generate areas of low pressure, or there are other indications that without further reductions in demand, a shortage could occur.

112.5.2 ANTICIPATED IMPACT

It is anticipated that Stage III will most likely be triggered during peak irrigation season. In a typical year, irrigation, primarily turf irrigation, can account for as much as 40 MGD of demand on a peak day. If this is the case, prohibiting irrigation will result in a 40 MGD reduction in total demand. At peak demand reduction of 40 MGD would be almost a 40% reduction.

112.5.3 GOAL

A 40% reduction in system demands as compared to Expected Peak Demand.

112.5.4 ACTION

Require customers to further reduce water consumption by suspending **all** turf irrigation use. This reduction is in addition to all steps implemented in Stage I and Stage II.

112.5.5 ENFORCEMENT

Customers observed by the UWU irrigating in violation of this policy will be notified by a tag left at the property. If irrigation is not suspended within 48 hours, water service will be terminated and the published termination fee will apply. Water service will be restored only upon receipt, by the UWU, of an undertaking by the customer that the customer understands and will comply with the mandatory conservation measures. Any subsequent violation will result in further termination of service. In addition the use of water for irrigation in violation of this plan shall be deemed an unauthorized use of water and "Unauthorized Use of Unmetered Water", as set forth in Section 102.5 of these Rules and Regulations shall apply and must be paid before water service will be restored.

112.6 STAGE IV: WATER RATIONING

112.6.1 TRIGGER

During periods of substantial irrigation demand, after Stage I, Stage II, and Stage III have been implemented and failed to achieve an adequate reduction in consumption, when Expected Peak Demand exceeds 90% of Current Capacity, or system demand is generating a high number of areas with low pressure, or there are other indications that without wise usage of water, a shortage could occur.

Stage IV may also be invoked, without resort to Stages I through III, if Expected Peak Demand exceeds 90% of Current Capacity for any reason that cannot be addressed by the measures contemplated by Stages I through III.

112.6.2 ANTICIPATED IMPACT

It is anticipated that Stage IV will only be triggered in the event of a significant and severe water shortage, or other event, which severely reduces capacity relative to demand. In this case, a reduction in demand to the lowest level which will meet public health and safety standards will be sought.

112.6.3 GOAL

A reduction in system demands as compared to Expected Peak Demand sufficient to allow the UWU to meet public health and safety standards.

112.6.4 ACTION

Water rationing measures will be implemented and enforced by application of an Emergency Water Shortage Fee (See section 112.6.6). In order to implement such fee, the DMWW/UWU shall set a target level for demand consistent with its Current Capacity and shall use such target to establish a "Rationing Factor" as defined in this Plan. All customers will be asked to reduce their consumption to a level at or below a "Stage IV Water Ration", and consumption above such level will be charged at the Emergency Water Shortage Fee intended to strongly discourage consumption above such level.

112.6.5 ENFORCEMENT

"Stage IV Water Ration" means for each customer the Typical Off-Peak Consumption of such customer multiplied by an announced Rationing Factor. "Typical Off-Peak Consumption" shall be computed as of the date that Stage IV is invoked as the average daily consumption of the customer for the immediately preceding months of March, April, and May. The Rationing Factor shall be a percentage, which may be above or below 100%, as announced by the UWU and designed to effectively reduce consumption to the level as required by the prevailing circumstances.

112.6.6 EMERGENCY WATER SHORTAGE FEE

While Stage IV is in effect, all water used beyond the Stage IV Water Ration for each customer will be billed the "Emergency Water Shortage Fee". The Emergency Water Shortage Fee shall be four times the customer's current water rate. Customers may appeal the Typical Off-Peak Consumption level determined for the customer as the basis for the customer's bill as inaccurate or inequitable under the circumstances applicable to the customer. Appeals must be submitted in writing and will be considered on a case-by-case basis as provided under these Rules and Regulations.