

Memorandum Memorandum

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MEMO DATE: April 16, 2021 (Updated June 3, 2021)
TO: Board of Directors
FROM: Wade Holland, Customer Services Manager
SUBJECT: Revising the District's Protocols Leading Up to Water Rationing

UPDATE (June 3, 2021): The proposed water rationing ordinance (Ordinance 100-2021) and the new version of Regulation 117 (Water Shortage Emergency) will be on the agenda for adoption by the Board of Directors at their regular meeting on June 23 at 9 a.m. You can access these documents on the District's website (invernesspub.org). By June 18, the website will also provide details on how the meeting will be conducted and how to participate. Communications sent to admin@invernesspub.org will be provided to the Directors and will become part of the public record.

We reported during the Board meeting on March 24, 2021, that we are laying the groundwork for the possibility that water rationing will become necessary at some point during the coming months. This effort has included taking a critical look at our current Water System regulation on water shortage emergencies (Regulation 117) and the District's current ordinance on mandatory water rationing (Ordinance 78-2009).

Regulation 117 was adopted in July 2001 (with minor amendments in 2009 and 2020). Ordinance 78-2009 was enacted in July 2009. Both seem out of date and in need of major revision before we attempt to activate a rationing program.

In preparing new versions of Regulation 117 and a water rationing ordinance,¹ we have paid particular attention to incorporating flexibility, so that the current and future Boards can activate a rationing program that best responds to the current situation and the circumstances under which a particular water shortage emergency has been declared.

Types of Rationing

We have examined other local water districts' rationing programs (either used in the past or recently placed on the books in anticipation of being used during the current drought).

We have identified three principal approaches to water rationing:

- By meter
- By resident
- By ratio (percentage)

We also discovered two variations that seemed reasonable to also consider:

¹ Note that we are proposing an entirely new water rationing ordinance (Ordinance 100-2021), rather than attempting to amend the existing Ordinance 78-2009 (which we are proposing that you withdraw and cancel).

- By resident with indexing for household size
- By combining rationing by meter and rationing by resident

The following is a brief overview of each of these five approaches to rationing, **as applied to residential water connections** (in all cases, it appears that non-residential users are rationed by ratio (percentage)).

- 1. Rationing by meter.** The water allocation is applied to each water meter; all residential services receive the same allocation (such as a maximum number of gallons per day per meter). This is the quickest type of rationing to put into place, and it is the simplest and easiest to administer and enforce. On the negative side, it does not consider household size, so that a meter serving a family of seven, for example, would be entitled to the same amount of water as a meter serving a weekender residence at which there are no fulltime residents. (Bolinis is planning to use a by-meter rationing scheme in the event they have to institute rationing during the current drought.)
- 2. Rationing by resident.** A water allocation is assigned to each resident (each fulltime occupant). The daily allocation for each meter is the number of gallons assigned per person times the number of people living fulltime on the property. This approach is more complicated to implement and administer, but it resolves the problem with the by-meter method of not taking family size into account. However, it may result in a very small household (only one or two residents) having to scrimp, while providing more water than might be reasonably necessary for a very large household. Implementation requires that a census be conducted in advance to determine the number of people residing at each property, and it also requires some means of providing an allocation to weekender houses at which there are no fulltime residents and a decision on how to treat properties being used as short-term rentals (STRs). (Rationing by resident was used by Marin Municipal when it rationed water in the 1975-77 drought.)
- 3. Rationing by ratio (percentage).** Each residential service is limited to a percentage of the amount of water used by that household during a base year. Typically, the percentage is the same for all residential customers (or classes of residential customers, if applicable). This approach can get complicated to administer, especially when you have many properties at which the usage pattern is variable (used as a weekend house part of the year, but occupied fulltime during the summer months, for example). The principal drawback is that it penalizes households that have already been conscientious about conserving water, while it rewards customers who have not been making much of an effort to cut back. In fact, basing rationing on past usage may result in some households receiving an unrealistically small allotment, while others (who have a history of high usage) will be able to get along quite comfortably. (This is the approach North Marin Water District has set up for its West Marin service area in the event it has to institute rationing during the current drought.²)
- 4. Rationing by resident with indexing for household size.** A water allocation is assigned to each resident (each fulltime occupant), but the number of gallons allotted per person depends on the size of the household – i.e., the larger the household, the smaller the allocation per person. For example, a one-person household might be allocated 75 gallons per day, a 2-person household might be allocated 65 gallons per person per day (135 gallons total per day), a 3-person household might be allocated 55 gallons per person per day (165 gallons total per day), etc. This method resolves the problem with the simple by-

² North Marin’s customers in its West Marin service area are currently under a mandatory 25% reduction in their water usage. The base year usage on which the 25% is determined is 2013, which was determined to be the most recent “normal” usage year.

resident approach in which very small households may be stressed to keep within their allocation while large households might receive a more-than-adequate total allocation. As with simple by-resident rationing, this option requires a census of the number of fulltime residents at each residential property and decisions on providing allocations to weekender and STR properties.

- 5. Rationing by a combination of by-meter and by-resident.** A fixed amount of water is allocated to each residential service, plus each service is allocated a fixed amount of water for each fulltime resident. As an example, the per-meter allocation might be 50 gallons per day and the per-person allocation might be 40 gallons per day, thus a one-person household would be entitled to 90 gallons per day (50 + 40), a two-person household would receive 130 gallons per day (50 + 40 + 40), a five-person household would receive 250 gallons per day (50 + (5 x 40)). This approach appears to come closest to resolving the various equity shortcomings of the other types of rationing. It also solves the problem of determining an allocation for weekender and STR houses: they would receive only the per-meter allocation (for instance, continuing with the example of a per-meter daily allocation of 50 gallons, a weekend property's visitors would have seven days' worth of per-meter allocation available for their use over a weekend visit, or a total of 350 gallons).

Our intention was to present these five approaches to rationing and ask the Board to select the one you want us to write into a new rationing ordinance. On reflection, and to support flexibility, it seems preferable to include all five in the ordinance as options (called "tracks"), enabling any particular Board to select the one that it feels will work best at that particular time.

Outline of the Process

The authority to declare a water shortage emergency is found in the California Water Code beginning with Sec. 350. The process begins with the Board adopting a resolution declaring a "Water Shortage Emergency" and placing a "Water Conservation Program" into effect. When the situation becomes most dire, the Board may adopt a Resolution that activates a mandatory water rationing program.

Here is an outline of the steps for our water system.

- 1. Resolution Declaring a Water Shortage Emergency (WSE).** The General Manager prepares a resolution that explains the circumstances that necessitate a declaration of a Water Shortage Emergency. The Board holds a public hearing and decides whether to adopt the resolution. In addition to stating the case for a WSE, this resolution activates a Water Conservation Program. In our case, the Water Conservation Program is embedded in Regulation 117 of the Regulations of the IPUD Water System.
- 2. Regulation 117: Water Conservation Program.** The resolution declaring a WSE places Regulation 117 and its "Water Conservation Program" into effect. The two most significant provisions of Regulation 117 are to prohibit installation of New Service Connections during the WSE and to provide for a three-stage Water Conservation Program whose stages can be put into effect progressively as necessary. The first stage focuses on common-sense actions to conserve water, the second stage enables a series of increasingly more restrictive limitations on outdoor watering to be placed into effect, and the third stage triggers the process to activate water rationing.
- 3. Resolution Activating Water Rationing.** The General Manger prepares a resolution that states the case for rationing and specifies options and parameters for the proposed rationing program. The Board holds a public hearing and decides whether to adopt the resolution and place the District's Ordinance 100-2021 into effect.

4. **Ordinance 100-2021: Mandatory Water Rationing Program.** The resolution activating water rationing places Ordinance 100-2021 into effect as of a date stated in the resolution. Various options and rationing parameters are provided in Ordinance 100-2021; the rationing activation resolution must state which of the applicable options and parameters are going to be used (for example, which one of the listed types of water rationing is to be used and the number of gallons of water to be allocated to each class of users).

At any time there arises a need to declare a Water Shortage Emergency, Regulation 117 and Ordinance 100-2021 will already be in existence legally but not actually in effect. The purpose of the two resolutions is to place these two documents' programs into effect: the resolution declaring a Water Shortage Emergency places into effect Regulation 117 and its Water Conservation Program, and the rationing activation resolution places into effect Ordinance 100-2021 and its Mandatory Water Rationing Program. These resolutions must be written at the time they are needed so that they can be tailored to the specific situation at that time. What we are doing here at this time (Spring 2021) is to rewrite Regulation 117 and to write a new water rationing ordinance so that (we hope) they will have sufficient generality and flexibility to enable them to be usable in a wide variety of different water shortage situations.

Once water rationing is no longer needed, the Board adopts a resolution cancelling water rationing. If possible, it can terminate the water shortage emergency at the same time (in the same or a separate resolution). In some cases, it may be advisable to only cancel water rationing but not to terminate the water shortage emergency. In such a case, the District would revert to the water conservation program in Regulation 117 (that is, step back to either Stage 2 or Stage 1 of the water shortage emergency's water conservation program).

Uncertainties

There are many challenges to implementing a water rationing program, and we are not sure exactly how we will accomplish some of the things we will have to do. This discussion lays out some of our uncertainties.

The staffing dilemma. Our most significant uncertainties concern whether we have sufficient staff to take on a rationing program and make it work effectively, efficiently, and in a timely manner. Here are some of the extra-work tasks we will have to be able to cover:

- Determine the daily usage allocation to be assigned to each individual service connection (when any rationing track other than by-meter is adopted).
- Conduct a census to determine the number of fulltime occupants at each residential service property (if a by-resident rationing track is adopted).
- Determine each individual service connection's average daily water usage over the preceding year (for all non-residential service connections and for residential connections when the by-ratio track is adopted).
- Notify each customer of the daily allocation assigned to that customer's service. Except when the by-meter track is used, this will have to be done individually for each customer (if it takes 5 minutes of staff time per customer, that equates to roughly one employee working fulltime for a week).
- Read meters on a frequent basis. It seems that to make rationing workable, we should read every customer meter probably every two weeks. In fact, we do not see how, with our current staff, we could manage to read every meter every other week on a sustained basis; probably, once in three weeks is the best we could hope for. For our normal bi-monthly meter readings for billing purposes, we set aside three days for the operations

staff to visit all 517 customer properties and read their meters (these employees have other normal system operations tasks to tend to each day, so typically no one ever reads meters exclusively for an 8-hour day). It would appear that some additional staffing is going to be required in order for a rationing program to be functional, especially if rationing goes on for a long period of time (an ominous possibility if the current drought extends into next winter).

- Process the meter reading results. How will we handle the data from these special meter readings (it's questionable that these readings can be processed through our service bureau's billing system)? How do we match the meter reading data against each individual customer's usage allocation to identify customers who are exceeding their allocation? How do we notify every customer on a frequent basis (every two or three weeks) about how they are doing – and do it quickly enough so that the customer has time to act on the information before the next time we show up to check their meter?
- Handle customer inquiries. We expect, especially at the beginning, to be deluged with inquiries from customers about the rationing program, how it applies to them specifically, whether their usage is complying, etc. We worry that we don't have the depth of staffing to handle the expected number of phone and email inquiries in particular, especially at the same time we expect to be stressed to keep up with the workload noted in the preceding item.
- Handle appeals. We can expect some customers to appeal for a larger rationing allocation, and there will doubtless be some appeals filed of fines that are assessed for noncompliance. These can become sources of unhappiness and contention, so it will be important that they be handled carefully and sensitively, all of which is a further draw on staff time and effort.
- Keep the District going. At the same time, staff has all its normal tasks to keep up with.

The IT dilemma. We face an initial problem of having the means to inform each customer in a timely manner about what their allocation is going to be. Then, on an ongoing basis, there is the big problem of the turnaround time from reading a customer's meter to producing a status notice and getting it to the customer. We do not at this time know how we will do this; one possibility might be to find some way to interface our existing customer database (which is maintained by our service bureau, Diversified Technology Corporation in Bloomsburg, PA) with each customer's rationing allowance (which may or may not be constant) and current meter reading results, and produce a usage and compliance report that can be emailed to the customer (with capability to use USPS mail for the approximately 10% of customers for whom we do not have an email address). Ideally, each day's meter reads would be processed and distributed the next day (at the latest) so that the customers learn very quickly after their meters have been read whether they are complying with their rationing requirement.

A possible approach. If we have the appropriate software, one possibility might be to take on a temporary-hire person who would be responsible for the entire rationing endeavor, with the goal of having this person read all the meters every two weeks (and not burdening our existing operations staff with the rationing effort). Each two-week interval would constitute one cycle, and each cycle would consist of three units of three workdays each (with the 10th workday at the end of each two-week cycle as an extra day to be used for whatever). On Day 1 in each cycle, the person would read one-third of the meters, then on Day 2 the person would process those readings and get status notices out to that set of users, then on Day 3 the person would tend to the many other demands that will be placed on this position (dealing with violations, responding to customer inquiries and problems, doing the record keeping that will be critical for monitoring whether the rationing parameters are set appropriately, etc.). The second third of the meters

would then be handled in the same way on Days 4, 5, and 6, and finally the last third of the meters would be handled similarly on Days 7, 8, and 9 (followed by Day 10 as the "extra" day). This two-week cycle which would start over again the next week. The key to this (in addition to finding and funding this employee) will be having software available that can handle the processing and notification tasks.