

STATE OF VERMONT EMERGENCY OPERATIONS PLAN
April 30, 2005 (Final Draft)

AGENCY OF NATURAL RESOURCES
DROUGHT MANAGEMENT PLAN

Introduction

The Agency of Natural Resources (ANR) has developed this **plan** to guide Agency activities in response to droughts and extended periods of dry weather. This operating procedure outlines the responsibilities of various programs, the lines of communications to be used, and the general sequence of actions to be followed based on the severity of the situation. This **plan** was developed in consultation with the **Vermont Emergency Management Drought** Task Force (VEMDTF).

Agency Strategic Plan

Two of the Agency of Natural Resources strategic goals are:

- To promote the sustainable use of Vermont's natural resources
- To protect and improve the health of Vermont's people and ecosystems

Drought conditions can affect the quality and quantity of our drinking water supply, and the health of all animals and plants in our ecosystems. Wild fires can also have impacts that range from moderate to severe on our natural resources.

One element of the Agency Strategic **Plan** underscores the importance of emergency preparedness: Improved Health Outcome:

Develop and implement appropriate training for Agency personnel on emergency planning, preparedness, and response. Provide Agency staff with Internet and other communication technologies to make them proficient in responding to the full range of emergencies. Define areas of greatest geologic hazard (floods, landslides, rockslides and earthquakes), and provide information to Vermonters on steps needed to reduce vulnerability.

1.1 PURPOSE

The purpose of this standard operating procedure is to help the departments and programs within the Agency:

- Coordinate their activities in response to **drought** situations;
- Identify responsibilities for information collection needed to assess the impacts from dry conditions;
- Establish a consistent basis for evaluating the severity of **drought** situations;
- Identify the lines of communications to allow the smooth flow of information to decision-makers; and
- Provide recommended actions to be taken by the Secretary in response to increasing or decreasing **drought** conditions (e.g. outreach, mitigation, funding).

1.2 CONTEXT OF DROUGHT PLAN

This **plan** is intended to be a stand-alone dynamic document while also being one element within the ANR Emergency **Plan**. This **drought plan** should be used and viewed as one part within the larger State Emergency **Drought Plan** that will be the planning “front end” procedure for the **Vermont Emergency Management (VEM)** Emergency Operations and Incident Command System.

1.3 ANR DROUGHT TEAM

ANR manages its response to **drought** conditions through its **Drought Team (DT)**. The Team monitors, coordinates, and manages response to **drought** conditions and makes recommendations to the appropriate entities to ensure impacts to public health, safety, and environment are avoided or minimized.

1.3.1 COORDINATION OF THE **DROUGHT** TEAM

Coordinating the DT is the responsibility of the Deputy Secretary of the Agency. The team consists of members from the Secretary’s office and each of the three Departments: Environmental Conservation; Forest, Parks and Recreation; and Fish and Wildlife. The team is responsible for:

- Meeting as necessary and defining member roles and responsibilities;
- Collecting and disseminating data on the status of the **drought**;
- Preparing DT meeting summaries and holding briefings as necessary;
- Coordinating communications between government agencies and the general public;
- Forwarding recommendations to the appropriate parties.

The roles and actions taken by the DT and the associated programs are not intended to infringe upon the statutory or regulatory obligations of the various departments or agencies responsible for responding to any particular situation. The **Drought** Team and the coordinating programs facilitate and participate in the VEM **Drought** Task Force, and ensure there is an integrated response by state and federal agencies to **drought** situations.

1.3.1.1 STATE OF **VERMONT** DROUGHT TASK FORCE MEMBERSHIP

The DT also coordinates with and provides information and recommendations to the VT **Drought** Task Force (VTDTF). This task force is made up of representatives from state and federal agencies including but not limited to: **Vermont** Department of Health (VDH), Department of Agriculture, Food and Markets (DAFM), United States Geologic Survey (USGS), Federal Emergency **Management** Agency (FEMA), University of **Vermont** (UVM), State Climatologist, Regional Planning Commissions, **Vermont** Emergency **Management** (VEM).

The VTDTF consists of officials from state and federal agencies as well as certain professional organizations that have responsibility for areas likely to be affected by **drought** conditions. In addition, the task force includes representatives of agencies that provide data related to assessing the severity of **drought** conditions, such as representatives from the United States Geologic Survey (USGS), National Weather Service (NWS), and other public health and safety professionals. Finally, the task force includes representatives of agencies that have the ability to

participate in responding to **drought** conditions, such as public health officials, public safety officials and the Army Corps of Engineers.

The contact list for the task force is contained in Appendix A. It is the responsibility of the Chair of the Task Force to maintain an up-to-date list of Task Force members, contacts and resources.

1.3.1.2 STATE OF VERMONT DROUGHT TASK FORCE RESPONSIBILITIES

The role of the Task Force is to facilitate communication, provide the ability to comprehensively assess the situation, and to jointly develop recommendations to respond to **drought** situations. Therefore, the two primary responsibilities of the Task Force are to gather the information necessary to assess the impact of dry conditions and to make recommendations to the Governor or agencies responsible for responding to **drought** or **drought**-related impacts. In the event of a severe **drought**, the Task Force makes recommendations for declaring regional or statewide emergencies and for developing and coordinating implementation of emergency responses. Once the Governor declares a **drought** emergency, the VEM takes the statewide lead using the incident command structure.

1.3.1.2.1 MONITORING CONDITIONS

Monitoring trends and collecting pertinent information are vital to making timely and accurate decisions. Therefore, this **plan** spells out the responsibilities of various programs to provide information that can be used to assess the severity of **drought** conditions and to assess impacts to the public health, economic viability and natural environment of **Vermont**. The specific **drought** indicators under the control of the ANR should be monitored or tracked as on-going program activities during normal weather conditions. These data should be collected and maintained on a frequent and consistent basis and preferably stored or made available in one location. An internal website location should be created for this purpose with links to other appropriate internal or public websites.

1.3.1.2.2 DATA COLLECTION AND REPORTING

When persistent dry conditions occur, department programs will be asked by the DT to provide specific data and summaries to the DT coordinators. Data provided by the respective programs will be compiled into the "Current Conditions Report", a report summarizing current water resource conditions prepared on a monthly or more frequent basis by the DT for the Secretary and VEM. This report will include groundwater data, surface water data, public drinking water shortage or outage data, and stream flow and lake conditions as well as reports on forest fire hazard and other environmental conditions. The DT will also be responsible for making these data (**drought** indices and other parameters as needed) available to other agencies and the public, as deemed necessary.

A description of the data collection responsibilities for each program is provided in Table 1.

1.3.1.2.2.1 Table 1

INFORMATION COLLECTION RESPONSIBILITIES
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INFORMATION	AGENCY
Summary of state surface water levels and stream flow conditions, wetland impacts.	DEC Water Quality Division and United States Geological Survey (USGS)
Summary of groundwater levels	DEC Geology Division/Water Supply and United States Geological Survey (USGS)
Impacts to ecosystems, flora, and surface water fauna	DEC Water Quality Division
List of public community systems on voluntary or mandatory water conservation, shortages, outages, or using emergency sources.	DEC Water Supply Division
Other drinking water quality, water pressure or public health concerns associated with drinking water supplies.	DEC Water Supply Division
Well Drilling data: number of drought related wells drilled or deepened. Well driller backlog to get to homeowners short or out of water.	DEC Water Supply Division
Forest fire conditions and forest health	FPR Forestry Division
Air quality impact due to forest fires	DEC Air Pollution Division
Impact to fisheries and aquatic biota	F&W Fisheries Division
Other	As Reported

1.3.1.2.3 COMMUNICATIONS

The key component to managing **drought** situations is to ensure clear lines of communication are in place for communicating with the public and decision-makers and that they have accurate information on which to base decisions. Therefore, this **plan** outlines a general communications framework for department programs to follow.

1.3.1.2.3.1 Communication within the Agency

DEC, FPR and F&W will provide data and recommendations to the DT. The DT will brief the Secretary and provide data and recommendations for **drought** response. This will not limit individual divisions or programs from communicating with the regulated parties or the general public with program specific information. The Agency or Department's designated press contact will be the primary vehicles through which information will be made available to the media and to the general public.

1.3.1.2.3.2 Communication with the General Public

Accurate and timely information about the current status of dry conditions and the resultant impacts must be communicated to the public. The Agency should speak with one voice and send a consistent, clear message. The DT is responsible for coordinating with the Secretary in communicating with the general public. The Secretary, in coordination with other Agency heads

as necessary, will apprise the Governor of the situation or communicate specific recommended actions.

If other agencies or groups determine that communication to the general public about dry conditions or **drought** response is necessary, they will coordinate with VEM **Drought** Task Force and other applicable agencies. The agency may communicate directly with the media or public or, as needed, coordinate with other agencies if they are making announcements. Drafts of press releases and other communications to the general public should be shared with VEM Outreach Committee or other agencies before they are released to ensure a consistent message is being communicated.

1.4 DROUGHT LEVELS

Unlike other short-term hazard situations, a **drought** may persist for months to years and the severity may change over time. This presents the opportunity to develop and implement appropriate measures as the situation evolves. Table 2 presents a set of **drought** indices that can be used together or separately to make a determination of the severity of the **drought**. The indices are generally scientifically derived measures or indicators of specific aspects of the type of **drought** in effect: meteorological, agricultural or hydrologic. Each indicator has criteria or thresholds which when exceeded correspond to a higher **drought** level. A program staff person will be chosen to evaluate each specific indicator and to determine the associated **drought** level when the criteria are met (e.g. Brent Teillon, FPR for Wildland Fire). Each indicator's **drought** level will be reported to the DT and the VEM **Drought** Task Force Technical Committee. The DT will then provide the Secretary of the Agency with a list of recommended actions based on the **drought** level.

1.4.1 COUNTY-BASED APPROACH

Though **Vermont** encompasses a small geographic area, the state has distinct regions that can experience significantly different weather patterns and react differently to the amount of precipitation they receive. Therefore, assessments of **drought** conditions by the DT may be undertaken on a regional or a statewide assessment basis.

The State can be roughly divided into three regions: the Lake Champlain Valley, the Northeast and Southeast. Because **drought** conditions may vary due to precipitation patterns, these regions may be adjusted based on the conditions in any particular **drought** situation. The State can also be divided up by hydrologic regime (i.e. watershed) or by the five regions used by FPR for fire hazard. Division by hydrologic region may be problematic since a watershed boundary may lie within a single town or cover several towns. These regions also vary in population, density, water demand, topography, and runoff characteristics. Because of these different characteristics, different responses may be needed.

The Agency will use a county approach to allow customized **drought** actions and conservation measures to be applied to the particular situation and maximize involvement and mitigation at the town and local government level.

1.4.2 DROUGHT LEVELS

This **Plan** outlines five general levels related to **drought** conditions:

- Normal

- Advisory
- Watch
- Warning
- Emergency

The levels provide a consistent terminology and a basic framework from which to take actions to assess, communicate, and respond to **drought** conditions. They begin with a normal situation where data are routinely collected and distributed and proactive education is provided, move to heightened vigilance with increased data collection, voluntary water conservation notices issued during an advisory, to increased assessment and more stringent water conservation measures taken or proscribed during a watch. Water restrictions might be appropriate at the advisory or watch stage, depending on the capacity of each individual water supply system or fire hazard. A warning level indicates a severe situation; mandatory water restrictions or bans on open burning may be instituted anticipating that a **drought** emergency declaration may be necessary. A **drought** emergency may be declared by the Governor based on recommendation from the VEM **Drought** Task Force and may require mandatory water restrictions or use of emergency supplies and personnel as necessary. Under a **drought** emergency, the VEM has the lead role using the Incident Command Structure.

The **drought** levels specified in this document relate to a general **plan** of action to coordinate statewide response to **drought** situations. However, numerous individual agencies have particular responsibilities for implementing on an ongoing basis. In addition, individual communities have a range of actions they can take to manage their systems during droughts. These actions are taken based on local assessment of local conditions and may not progress through the same levels outlined above.

1.4.3 DROUGHT SEVERITY INDICES

A **Drought** can have a range of impacts; as a result, a number of **drought** indices are available to assess the various affects. The ANR will use a multi-index system. An index may be used alone or in conjunction with other indices to determine the severity of a given **drought**. See Table 2.

1.4.3.1 DROUGHT ASSESSMENT

In order for the State of **Vermont Drought** Task Force and ANR **Drought** Team to assess the severity of a **drought**, five levels of **drought** have been identified. The levels are Normal, Advisory, Watch, Warning, and Emergency. There are numerous quantitative and qualitative measures of **drought** severity. Several programs within the Agency collect **drought**-related data. The four quantitative indices ANR uses are: Wildland Fire, Public Water Systems, Surface Water and Groundwater. Three important qualitative areas are also described but lack discrete measurable characteristics. A detailed description of each index is provided below. The four ANR indices can also be used within an expanded set of **drought** indices maintained and evaluated by the State Climatologist, DAFM, USGS and others.

Each index is divided into five sections matching the **Drought** Levels. Each section provides the criteria or threshold that needs to be met for that specific **Drought** Level for that specific index. The division responsible for their particular index will determine the corresponding **Drought** level for that index either on a statewide, county or more specific area. Due to variability of **drought** conditions and the indices themselves, each index stands alone (i.e. National Fire

Danger Rating may be low but Groundwater monthly mean may be at Warning level). However, some or all the indices may be taken together, combined with other indices, and/or weighted to provide an overall **Drought** Level. The **Drought** level determinations may be made on a monthly or more frequent basis and will be reported to the Secretary, the **Drought** Team, VEM, other parties and posted to websites as necessary. **Drought** levels may be determined on a county or statewide basis

1.4.3.2 DROUGHT INDICES

Wildland Fire Potential: National Fire Danger Rating System (NFDRS) fire danger rating is a numeric scaling of the potential over a large area for fires to ignite, spread, and require fire suppression action. Local observations at five statewide stations (St. Johnsbury, Essex, Elmore, Danby, Marlboro) are factored in with weather conditions and other inputs to provide six components: Spread, Burning Index, Energy Release, Ignition, Fire Load Index and Adjective Class. This is a short-term index, which is determined daily and can change daily. The fire hazard is available from the FPR. WEBSITE URL: and

Public Water Supply Status: An assessment of the status of public water supply (PWS) sources and private homeowner water supplies (anecdotal). A list of Public Community Water Systems (PCWS) experiencing water shortages, outages or using emergency sources is available from the DEC Water Supply Division (WSD). The list of public water systems includes a description of the source type (e.g. bedrock wells, springs, infiltration galleries), date action taken and status (e.g. voluntary conservation, use of emergency source, pump failure). Systems with **drought** related shortages or outages are noted separately from systems with shortages or outages due to seasonally limited yield, well bore collapse, increased system demand, leaks, etc. Thresholds are a percentage of the 380 +/- PCWS impacted. As needed, Non-Transient (about 200) and Transient water systems (about 600) can be contacted and percentages calculated for them. WSD contacts with homeowners and the well drilling community provide anecdotal information of **drought** impact. (WSD) WEBSITE URL:

NOTE: Water shortage is defined as a source that is intermittently (daily or seasonally) able to meet the system demand.

Groundwater Levels: A measure of percentage of groundwater wells and length of time water levels (monthly mean) are within the lowest quartile (lowest 25% of total number of values over the period of record of the measurement). Groundwater level maps showing areas of above normal, normal and below normal are provided monthly by the USGS in conjunction with the WSD and Geology Division. This reflects shallow groundwater levels since only 13 sand and gravel monitoring wells are available. This measure doesn't reflect the status of deeper, more consolidated overburden or bedrock well water levels in the state. (USGS/GD) WEBSITE URL:

Surface Water: A drought level determination is based on the number of consecutive months surface water levels monthly means are within the lowest quartile (lowest 25% of total number of values over the period of record of the measurement). Data is collected from more than 48 gauging stations. Surface water condition maps showing areas of above normal, normal and below normal are provided monthly by the USGS and the Water Quality Division. The USGS website has real-time data display. (USGS/WQD) WEBSITE URL:

1.4.3.3 QUALITATIVE INDICATORS

There are several important areas or issues that may be affected by drought but are not easily quantified. A determination of impact to these resources may be made using some of the indicators listed above or provided by other programs.

Agricultural Indicators: An assessment of the status of crops or plants such as apples, corn and Christmas trees as they reflect the impact of the drought – county by county; available from USDA, DAFM, Farm Service and UVM Extension Service. WEBSITE URL:

1.4.3.4 FOREST HEALTH INDICATORS

Forests are comprised of more than just trees. The bedrock geology, native plants and animals, streams and air are all important parts of forests. The components that make up a forest ecosystem are all interrelated and effect one another. Keeping track of forest health involves assessing a variety of indicators.

Forest health indicators are elements of the ecosystem that can be measured and used to estimate the condition of ecological resources, the amount of stress in the environment, the biological exposure to that stress, and/or the amount of change that has occurred over a period of time.

Trees are an obvious and important indicator of forest health. A wide range of observations and measures are made on trees and tree stands on plots statewide and tracked over time to assess forest condition. The Vermont Monitoring Cooperative has tree health study sites on Mount Mansfield and in the Lye Brook Wilderness. Tree health monitoring includes: condition of tree crown, transparency, presence of life-threatening damage from insects, diseases, weather or other factors and observation of trends in seasonal bud and leaf development including fall coloration.

1.4.3.5 FISH AND WILDLIFE INDICATORS

The effect of drought on fish and wildlife is difficult to measure but can be significant. Terrestrial or aquatic species are poor indicators of drought. The severity of the other drought indicators would be extreme by the time measurable or large scale effects are seen in wildlife. Low surface water levels, water withdrawals, sudden flow releases or releases of waters of different temperature can all have significant impacts to aquatic biota. Low water levels and forest fires (greater potential due to dry conditions) will increase stress on or destroy terrestrial habitats and wildlife.

1.4.3.6 TABLE 2 DROUGHT INDICES

DROUGHT INDICES				
DROUGHT LEVEL	WILDLAND FIRE POTENTIAL NFDRS*	GROUNDWATER ***	PUBLIC WATER SUPPLIES AND PUBLIC COMMUNITY WS	SURFACE WATER
Normal	Low	35% of wells are within the lowest quartile for 2 consecutive months or less **	Less than 1% of Public Community Water Supplies on shortage or outage list. Domestic replacement wells list	The monthly mean is within the lowest quartile for 2 consecutive months or less **
Advisory	Moderate	35% of wells are within the lowest quartile for 3 consecutive months **	1-2% PCWS short or out of water.	The monthly mean is within the lowest quartile for 3 consecutive months **
Watch	High	35% of wells are within the lowest quartile for 4-5 consecutive months **	3-5 % PCWS short or out of water. NTNC and TNC %	The monthly mean is within the lowest quartile for at least 5 out of 6 consecutive months **
Warning	Very High	35% of are within the lowest quartile for 6-7 consecutive months **	6-8 % PCWS short or out of water. NTNC and TNC %	The monthly mean is within the lowest quartile for at least 6 out of 7 consecutive months **
Emergency	Extremely High	35% or more of wells are within the lowest quartile for 8 or more consecutive months **	9 %or greater PCWS short or out of water. NTNC and TNC %	The monthly mean is within the lowest quartile for at least 7 out of 8 consecutive months **
<p>Data Source = FPR GD/ USGS WSD WQD/USGS Abbreviations: NFDRS = National Fire Danger Rating System; FPR = Forest, Parks and Recreation; GD = Geology Division; USGS = United States Geological Survey; WQD = Water Quality Division; WSD = Water Supply Division.</p> <p>NOTE: Data Source shown at bottom of table reflects the program that manages or measures the index above.</p> <p>*The Fire Danger level is calculated daily and subject to frequent change. ** Quartile is 25% of the total number of values over the period of record for the measurement. *** Doesn't account for deeper overburden or bedrock sources.</p>				

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1.4.3.7 DETERMINATION OF THE END OF A DROUGHT

Determinations of the end of a drought or to reduce the drought level will focus on the drought indicators reflective of meteorological and hydrological drought: precipitation related indices and groundwater and surface water levels. These indices represent the greatest long-term impact through stream flow, water supply, reservoir levels, soil moisture and potential for forest fires. Precipitation is a key factor because it is the overall cause of improving conditions. Groundwater levels respond slowly to improving conditions so they are a good indicator of a long-term recovery to normal conditions.

A given drought level can change in one of three ways after the first month it has been reached. If conditions reach the criteria for the next drought level, the severity will be increased. If conditions persist but do not reach the next level, the drought action level will be held constant. If conditions improve, the severity can be reduced based on either site-specific information or on progress toward returning to normal.

The indices in Table 2 will be used to determine the drought level. The individual indices may each change at varying rates and times due to climatological and hydrological factors. A drought has ended once the hydrological factors (Groundwater, Surface Water and Public Water Supplies) have returned to normal status as determined by the division indicator lead, relayed to the ANR Drought Team in consultation with VEM Drought Task Force Technical Committee. The DT members should communicate this information to their target audiences, as described in Section 4. This message should not only include an update on the current conditions, but should communicate the need for general conservation measures and emergency planning as part of good water resource management practice.

1.4.3.8 PLAN REASSESSMENT

Once a drought has ended, the DT will undertake an evaluation of how well this plan was structured and implemented. Positive and negative events and actions should be listed, evaluated and used to refine this plan for future use. A summary report should be attached to the revised plan as an addendum. The report should quantify the “costs” incurred dealing with the drought impacts. The breakdown may include: equipment used or purchased; damage to crops, ecosystems, the public; agency staff time and expense; debt burden or free services provided by well drillers, water operators, public health officials, etc.

1.4.3.9 DROUGHT LEVEL DECISIONS

Many parties are involved in decision making before, during and after a drought. This ANR Drought Plan is just one part of the Agency, State and regional process. Using the Drought Indices, Table 2, a general framework or hierarchy has been developed to clarify the role of the ANR within the larger state and local government. During normal and advisory drought levels, programs within each ANR department along with other state agencies, collect and maintain their specific data on the state of the environment or public health. At the advisory level, the ANR Drought Team and the VEM Drought Task Force would convene and coordinate data gathering, analysis and dissemination. Data are shared or made available as needed. At the advisory level, the VEMDTF technical committee would evaluate the “Current Conditions

Report” from the various programs and all the drought indices to determine the overall statewide drought level up to and including emergency (and back down to normal level). During a drought watch or warning the VEMDTF would take on an increasing level of coordination and at warning level would be the lead contact group. The VEMDTF technical committee, in coordination with other agency heads and stakeholders, would make the recommendation to the Governor to declare a drought emergency (either state-wide or by county) if the severity of the drought warranted it. Once the declaration has been made, the Governor and VEM assume all leadership for drought activities and implement the Incident Command System. A lessening of severity would step backward down the drought levels.

1.4.3.10 ANR DROUGHT RESPONSE

1.4.3.10.1 ANR DROUGHT RECOMMENDED ACTIONS

Table 3 outlines the Drought Level and the corresponding actions each division or program responsible for a drought index would recommend to the Secretary and other parties given the severity of the situation. It is anticipated that drought responses will be directed to regions of the state based on the county or regional assessment of Drought Levels. The table begins with general information collection and sharing of that information under normal or drought advisory conditions up to preparation for and declaration of an emergency situation by the Governor.

The recommended actions in Table 3 provide a general outline to be taken by ANR and various agencies as dry conditions persist and the drought develops. Agency and Department level recommended coordination, internally and with other agencies, is presented in the first of the four sections within Table 3. The later three sections are program specific recommended actions. These actions are not intended to limit or inhibit the discretion of the agencies as they undertake program activities. Also, as discussed further in Section 7 on drought indices, some program actions may be triggered for a particular drought index, separate from the other drought indices.

1.4.3.10.1.1 Table 3: ANR Drought-Related Recommended Actions

GENERAL ANR COORDINATION AND DROUGHT RECOMMENDED ACTIONS	
DROUGHT LEVEL	RECOMMENDED RESPONSE/ACTIONS
Normal Conditions	<ul style="list-style-type: none"> • WSD, WQD, Geology Division, FPR collect basic weather, fire hazard, hydrological and public water supply data and produces monthly “Current Conditions” report – sent to Secretary if requested or located on websites(s). • WSD encourages communities to fix leaks and conserve water during normal and drought related events.
Drought Advisory	<ul style="list-style-type: none"> • DT convenes, evaluates and distributes monthly summary of drought conditions “Current Conditions Report” to Secretary and VEMDTF. • VEM contacts members of DT and calls to host a meeting of the VEMDTF. • WSD communicates with public water systems and well drillers about dry conditions. • DT or specific programs develop and issue general

GENERAL ANR COORDINATION AND DROUGHT RECOMMENDED ACTIONS	
DROUGHT LEVEL	RECOMMENDED RESPONSE/ACTIONS
	<p>press announcements as necessary.</p> <ul style="list-style-type: none"> • WSD, F&W, FPR, WQD, GD, USGS, DAFM, VDH and others coordinate on a regular basis to exchange information regarding the status of, fisheries, forest fire hazard, wildlife and agriculture impacts and status of drinking water supplies. • ANR programs expand data collection and monitoring.
Drought Watch	<ul style="list-style-type: none"> • Intensified monitoring and appraisal of drought situation through information gathering of state agencies, coordinated through DT and VEMDTF committees. • WSD offers technical assistance to communities on managing systems during dry conditions, including assistance on use of emergency connections, supplies, water conservation, leak detection and disinfection. • DT ensures towns know how to request a water buffaloes, tankers, haulers and guidelines for use. • WQD, FPR, WSD, USGS, DAFM provide more detailed assessment of environmental/agricultural impacts of worsening conditions. • DT and Secretary undertake public outreach regarding current conditions and water conservation measures. • DT and Secretary's office centralize drought related data and information (website). • VEMDTF and DT increase contact and planning efforts with state and federal agencies.
Drought Warning	<ul style="list-style-type: none"> • VEMDTF and DT implement measures to reduce water use and protect public health, economic and environmental interests, promote public information, technical assistance, leak detection and water conservation. • VEMDTF implement press strategy to keep media and public informed about the situation (i.e. VEM website, Public Service Announcements). • DT and WSD collect information on availability and use of emergency sources of water. • WSD, DAFM and VDH work closely with local governments to assess public health and livestock threats and take actions as needed. • VEMDTF Outreach Committee contacts and coordinates with New England states and New York to alleviate drought impacts. • VEMDTF Outreach Committee prepares Governor declaration of a drought emergency and

GENERAL ANR COORDINATION AND DROUGHT RECOMMENDED ACTIONS	
DROUGHT LEVEL	RECOMMENDED RESPONSE/ACTIONS
	<p>recommendations to Governor on communications strategy.</p> <ul style="list-style-type: none"> • VEMDTF Financial Committee develops recommendations for special legislation and begins process to utilize appropriate federal assistance options.
<p>Drought Emergency</p> <p>Governor and VEM have lead role under Incident Command System</p>	<ul style="list-style-type: none"> • VEM finalizes Governor declaration of drought emergency to utilize state emergency authorities and powers to restrict water uses and implement measures to provide emergency water supplies. • VEMDTF continues to coordinate response of state, local and federal agencies and determines end of drought. • Governor secures emergency funding and/or legislation. • Governor secures federal assistance, if possible.

DROUGHT LIST OF RECOMMENDED ACTIONS FOR PUBLIC WATER SUPPLIES (WATER SUPPLY DIVISION)	
DROUGHT LEVEL	RECOMMENDED RESPONSE/ACTIONS
Normal	<ul style="list-style-type: none"> • Maintain list of Public Water Supplies (PWS) status—using emergency source, alternate sources (permitted), and short or out of water, offline for rehab, etc. • Maintain list of private homeowners well problems, as necessary. • Base line message to public—fix leaks, encourage metering and water conservation. • Encourage PWS to develop drought specific bylaws, ordinances, covenants, etc. to ensure water restrictions, conservation, etc. (provide sample bylaw language) • Develop and update PWS long range plans. • Ensure all PWS have certified operators. • Conduct sanitary surveys of PWS, provide technical assistance and identify deficiencies. • Conduct hydrogeologic and engineering review for permitting of new sources and systems improvements (wells, storage tanks, treatment, etc.). • Public outreach—newsletters, notices as necessary. • Maintain list of water haulers, tankers, etc.
Advisory	<ul style="list-style-type: none"> • Send Drought Advisory (card) message to PWS—email, website, mail, etc. • Develop and maintain list of vulnerable or “likely to be impacted next” PWS. • ANR Drought Team and State of Vermont Drought Task Force convene—WSD provides member(s) to each team.
Watch	<ul style="list-style-type: none"> • Send Drought Watch (card) message to PWS—email, website,

DROUGHT LIST OF RECOMMENDED ACTIONS FOR PUBLIC WATER SUPPLIES (WATER SUPPLY DIVISION)	
DROUGHT LEVEL	RECOMMENDED RESPONSE/ACTIONS
	<ul style="list-style-type: none"> mail, etc. • Issue Public Service Announcements with strong (voluntary) conservation message. • Send questionnaire to PWS to determine status and impact due to drought. • Evaluate “resources available to PWS (SRF funds, equipment, contacts, staff assistance, etc.). • Provide list of water haulers, tankers, etc. to PWS and public. • Prioritize source permitting and construction projects with regard to drought impact (systems out of water—highest priority). • Increase drought related coordination and data sharing with other agencies. • Provide more field visits for technical assistance to PWS (i.e., low pressure, cross connection control, treatment and disinfection procedures, etc.).
Warning	<ul style="list-style-type: none"> • Send Drought Warning (card) message to PWS—email, website, mail, etc. • Expedite drought related source and construction permitting • Direct PWS to implement water restrictions, bylaws or ordinances. • Request municipalities enact mandatory water restrictions. • Contact VDH to request health officer assistance to enact mandatory water restrictions. • Regionalize impacted water systems [connection to alternate water system(s)]. • Implement prioritized surface water withdrawal for drought-impacted systems. Evaluate treatment needs. • Require treatment or use of water only for sanitary needs. <p>*** →</p> <p>*** →</p> <p>*** →</p>
Emergency	<ul style="list-style-type: none"> • Governor declares Drought Emergency. VEM on Incident Command System. • Public Health use of water (emergency SW use) for sanitation (less critical uses—fish and wildlife). • Mandatory water restrictions. • Prohibit non-essential water usage: watering lawns, filling pools, large commercial or industrial use, etc. • Send Drought Emergency (card) message to PWS—email, website, mail, etc.
<p>*** → For these items, the programmatic conflicts will have been resolved prior to reaching this level. Agreement will be reached on a prioritized list of water usage (i.e. surface water withdrawal for PWS – first, Fire suppression or forest fire fighting use – second, low flow for aquatic biota – third, limited commercial or industrial withdrawals.</p>	

DROUGHT LIST OF RECOMMENDED ACTIONS FOR SURFACE WATER (WATER QUALITY DIVISION)

DROUGHT LEVEL	RECOMMENDED RESPONSE/ACTIONS
Normal	<ul style="list-style-type: none"> Develop and maintain a contact list of non-permit required surface water users, e.g. contractors, water haulers, road crews, pool fillers, car washes, farms (coordinate with DAFM)
Advisory	<ul style="list-style-type: none"> WQD Outreach (calls, email, mail, etc.) to advise surface water non-permit required users to reasonably limit use of surface waters. <p>Provide WQD staff to and coordinate with drought team.</p>
Watch	<ul style="list-style-type: none"> Press Release (Public Service Announcement - radio, TV, etc.). <ul style="list-style-type: none"> Suggest reduction in non-essential withdrawals from surface waters. Warning of transport of invasive species - water haulers, etc. Provide guidance to WSD and Public Water Systems (PWS) on use of surface water for emergency connections & alternative sources. Coordinate with USGS on providing and receiving data more frequently.
Warning	<ul style="list-style-type: none"> WQD reviews permit conditions for hydroelectric and other facilities. Press Release (Public Service Announcement - radio, TV, etc.) -coordinate with WSD, municipalities, VLCT, PWS, etc. Request reductions in surface water use and issue swimming warnings (e.g. <i>E. coli</i>) as needed. Request water haulers, tankers of non-potable water to focus on large rivers/lakes and ponds. Recommend all water haulers, tankers to consult with WQD.
Emergency	<ul style="list-style-type: none"> Press Release (Public Service Announcement - radio, TV, etc.) Require surface water be limited to essential purposes. Restrict surface water withdrawals to larger rivers or lakes & ponds. Require all water haulers, tankers to get approval from DEC for all water withdrawals.

NOTE: Any withdrawal less than or equal to .005 cubic feet per second multiplied by the drainage area in square miles, or 5% of the 7Q10 stream flow is considered *de minimus* and may be withdrawn from a surface water body at any time. Example: 2 gpm for each square mile of drainage area.

DROUGHT LIST OF RECOMMENDED ACTIONS FOR WILDLAND FIRE POTENTIAL		
DROUGHT LEVEL	NFDRS LEVEL	RECOMMENDED RESPONSE/ACTION
Normal	Low	<ul style="list-style-type: none"> Monitor fire weather, issue daily reports Maintain town forest fire warden contact list Maintain list of other fire contacts, i.e. Volunteer Fire Departments, dispatch centers, Green Mountain National Forest (GMNF), New England Compact

DROUGHT LIST OF RECOMMENDED ACTIONS FOR WILDLAND FIRE POTENTIAL		
DROUGHT LEVEL	NFDRS LEVEL	RECOMMENDED RESPONSE/ACTION
		<ul style="list-style-type: none"> • Maintain agreements with our cooperating partners, i.e. GMNF, Compact, US Forest Service
Advisory	Moderate	<ul style="list-style-type: none"> • Continue to monitor fire weather • Alert/maintain contact with Protection field personnel • Planning and systems checks
Watch	High	<ul style="list-style-type: none"> • Increase public awareness with press releases to radio, TV, newspapers • Information acceleration • Contact with GMNF and other states – electronically • Fire Wardens stop issuing burning permits • Protection put on standby • Notify partners
Warning	Very High	<ul style="list-style-type: none"> • Protection section on standby – available after hrs/weekends by radio, cell phone • May fly aerial fire patrol routes – detection flights • Wardens stop issuing permits leading to state burning bans by Secretary of ANR (based on number of fires occurring, number of days without precipitation, KBDI index, short/long term forecast) • Notify NE Compact
Emergency	Extreme	<ul style="list-style-type: none"> • If situation continues for 2-3 days, closure of woods by Governor may be required.

1.5 AGENCY, DEPARTMENT AND DIVISION RESPONSIBILITIES

The Secretary of the agency is responsible for the implementation of this plan and coordination of data collection and outreach to the public through the ANR Drought Team. The following three sections provide a brief description of the Department and Divisions having significant drought related responsibilities.

1.5.1 DEPARTMENT OF ENVIRONMENTAL CONSERVATION

Water Supply Division: Regulates public water systems both municipal and privately owned. The WSD is concerned with public health or safety threats as a result of the status of their water supply systems, whether caused by drought conditions, contamination, water pressure problems or for other reasons. WSD works with the Responsible Person and the Water System Operator for each system to ensure the provision of safe water to all the customers through the Safe Drinking Water Act. Voluntary water conservation and restrictions can be implemented along with other technical assistance such as leak detection, guidance on bulk water hauling, disinfection, and treatment.

Dry conditions can impact the availability of water and the quality of water. Low water pressures can result in bacteria problems in water distribution systems. Low water levels in surface water supplies can also result in water quality problems and pump failure in groundwater supplies.

The WSD monitors drinking water quality in public systems. WSD also provides notification to public systems on necessary steps to disinfect or treat drinking water.

Geology Division: Conducts research and surveys related to the geology, mineral and groundwater resources, and topography of the State of Vermont. A monitoring network of 13 shallow sand and gravel wells provide data on groundwater levels across the state. The network is evaluated and funded in conjunction with the USGS. The groundwater data are available on the USGS website.

Water Quality Division: Manages the surface waters in Vermont along with identifying the State's wetlands, floodplains, biomonitoring, and studies water resource use, characteristics, quality and hydrology. A monitoring network of surface water gauging stations provides data across the state. The network is evaluated and funded in conjunction with the USGS. The surface water data are available on the USGS website.

1.5.2 DEPARTMENT OF FOREST, PARKS AND RECREATION

Risk of fires in wild land, rural areas, state forests and parks are linked to dry conditions. In addition, a drought can impact the availability of water for fire suppression, forest health (and foliage - tourism impact). Assessment of fire risk and management of fire control resources is an on-going activity of the Forest Resource Protection and Urban & Community Forestry. Commissioner of DFPR is responsible for managing state fire suppression resources and to coordinate with other local, state, federal agencies and other states to provide the appropriate resources given the situation.

1.5.3 DEPARTMENT OF FISH AND WILDLIFE

Dry conditions can lead to a range of impacts to fisheries and wildlife, from reducing food sources to fish kills or displacement of certain populations of animals. Department responses include responding to incidents of wildlife entering residential or urban areas. They also include identifying developing impacts to specific fisheries and wildlife populations so that other agencies, such as local governments, DFW or others, can implement measures to reduce the impacts to these resources. For example, if low stream flows threaten fish populations, DFW can work with DEC and local municipalities to ensure water restrictions are in place to minimize the impact from water use in these areas.

1.6 LEGAL AUTHORITIES AND POWERS

The following sections discuss the local, state, and federal authorities and powers related to drought situations. Below is a general summary of the laws applicable to drought issues. However, the appropriate legal staff should be consulted in advance of the use of any of these powers by a state agency.

1.6.1 AGENCY OF NATURAL RESOURCES

1.6.2 DEPARTMENT OF FISH AND WILDLIFE

10 V.S.A. § 4401 Suspension of open season by proclamation of governor:

- During open season "when it appears to the governor that, by reason of drought, hunting, fishing and trapping is likely to cause forest fires, he may by proclamation

suspend hunting, fishing and trapping and make it a closed season for such time as he may designate."

1.6.3 DEPARTMENT OF FORESTS, PARKS AND RECREATION

10 V.S.A. § 2645 Open burning; permits:

- During periods of extreme fire hazard, the commissioner may notify town fire wardens that for a specified period no burning permits shall be issued. The wardens shall issue no permits during the specified period.

10 V.S.A. § 2646 Proclamation by Governor, Prohibiting Kindling Of Fires: Closing Of Woodlands:

- In times of extreme fire hazard, the governor may issue a proclamation banning fires. Specifically "whenever it appears to the governor that there is excessive danger of forest fires, he may prohibit by proclamation the kindling of a fire in or adjoining forest and or close any or all sections of woodland, or brush land, in any town for such time as he may designate, to all persons except the owner and his household, his tenants, servants or agents and persons in the public employment engaged in abating such fire-hazardous condition."

1.6.4 DEPARTMENT OF ENVIRONMENTAL CONSERVATION (DEC):

DEC's authority for addressing water supply shortages or outages is derived from many sources, including the following statutes and regulations related to ensuring the provision of safe drinking water.

10 V.S.A. § 1272. 1272 Order: Water Pollution Control

Chapter 47 establishes the state's water quality policy and allows the Secretary to issue a "1272 Order," a special procedure that may authorize a limited but necessary discharge under unusual circumstances. The Secretary may issue a 1272 order where an activity is necessary and prudent yet has the potential to unavoidably violate the water quality standards, e.g. back-flushing a public water system after contamination due to severe drought or tampering.

10 V.S.A. §§ 1390-1394. Policy; Duties; Powers of the secretary: Groundwater Protection

- Chapter 48 protects the state's groundwater resources for high quality drinking water and minimizes the risks to groundwater from human activities. Protection is paramount particularly in times of extreme drought, when groundwater resources may become scarce.
- Among other powers, the secretary is authorized to develop comprehensive management plans, develop groundwater use classifications, strategies and studies; provide technical assistance to local public bodies, and administer grants for groundwater management purposes in accord with the administrative procedures of the state.

- See DEC's Ground Protection Rule and Strategy, 1/20/2000;
- See also DEC's Well Drilling Rules and Standards, 11/03/1986

10 V.S.A. § 1978. Rules: Potable Water Supply and Wastewater System Permit

- Chapter 64 requires adequate potable water supplies and wastewater disposal systems.
- The secretary shall adopt rules necessary for the administration of this chapter. These rules include standards and specifications needed to maintain sufficient capacity for periods of peak demand and necessary requirements to protect human health and the environment.

10 V.S.A. § 8003. Applicability: Enforcement

- The secretary may take action under this chapter to enforce applicable chapters of Title Ten, relating to water pollution control, water quality standards, water resources management, well drilling, public water supply and wastewater.
- Action might include enforcement of emergency water restrictions to curb nonessential use at the local level.

10 V.S.A. § 1672. Authority of the Agency of Natural Resources: Public Water Supply

- Authority is vested in the secretary to regulate the purity of drinking water as well as the adequacy, construction and operation of public water systems, public sources and protection areas.

10 V.S.A §§ 1675-1685. Permits; conditions; duration; suspension or revocation:

- The secretary may issue public water system permits with conditions to promote adequate quantity and quality of water for any proposed public water source.
- Penalties for violation of this chapter or rules promulgated under it include monetary fines up to \$5,000. Willful violations incur penalties up to \$25,000 and imprisonment up to 6 months.
- The secretary may take measures to improve public water system infrastructure and to provide safe drinking water to small community water systems and schools. Measures include:
 - Source water protection programs;
 - Capital improvement planning;
 - Minimum design and construction standards;
 - Operation and management practices, etc.

Water Supply Rule, Environmental Protection Rules, Chapter 21

The Vermont Water Supply Rule (WSR) is adopted under the authority of the above statutes, specifically 10 V.S.A. Chapters 48, 56, 61 and 18 V.S.A §1218. The rule also refers to and adopts the authority of the Federal Safe Drinking Water Act: 42 U.S.C. § 300f. et. seq. and 40 CFR Parts 141, 142, and 143, under an agreement with the EPA, by which the State of Vermont has primary enforcement authority (primacy) for the Safe Drinking Water Act within its borders.

Under *WSR Subchapter 21-1, 1.1 Authority*, "where necessary to protect the public health, but subject to appeal, the secretary may require additional drinking water permit conditions..." Additional water quality monitoring and public notification measures may be required by the secretary to insure protection of public health and welfare.

Moreover, public water systems must provide an adequate supply of water to all users. If the system is unable to meet normal and peak demands, water system operators "shall, on an emergency short-term basis, take appropriate action to reduce nonessential demand... achievable by directive from the water system to its users, which may include the implementation of water conservation practices and the prohibition of water use for nonessential purposes (e.g., lawns, gardens, vehicle washing)." *WSR Subchapter 21-7, 7.7.3 Facility and Operation Requirements*.

Enforcement authority of these measures stems from 10 V.S.A. Chapter 201, with penalties for violation of these rules specified in 10 V.S.A. Chapter 56, §1681. "In the enforcement of these rules, including the adopted requirements of 40 CFR, Part 141, the Secretary shall act within the responsibilities imposed upon the state, when it has primary enforcement responsibility, in 40 CFR, Part 142, Subpart B, Primary Enforcement Responsibility." *WSR Subchapter 21-14, 14.1 Enforcement Authority*.

Under this rule, DEC might require the municipality or water suppliers to implement the following water conservation methods: (1) an approved water resources management plan; (2) a leak detection program; (3) a program for auditing water use; (4) a program for overall system rehabilitation; (5) conservation programs for public and private buildings; (6) bans or restrictions on certain water uses; (7) a moratorium on the issuance of building permits; (8) a plan for establishing priority for distribution of water among competing uses; and (9) drought management or contingency plans.

Finally, in times of drought, some towns are hit harder than others and water tanks are often brought in on a temporary basis. Water tanks or tank trailers are a form of bulk water regulated under *WSR Subchapter 21-11, 11.2 Bulk Water*. Under *WSR 11.2.1*, bulk water distributed for human consumption must comply with state drinking water quality standards. See *WSR Subchapter 21-6*. Moreover, filling stations for finished water to non-plant vessels shall comply with Appendix A, subpart 8.11.

1.6.5 OTHER AGENCIES AND PARTIES

1.6.5.1 GOVERNOR DECLARED STATE OF EMERGENCY

20 V.S.A. Chapter 1, §§ 1-14:

The legislature has placed the primary statutory-based drought management tools at the disposal of the Governor and ANR. The governor has several established mechanisms for responding to drought conditions, including the power to declare a

state of emergency in response to natural disasters, radiological incidents, hazardous chemical or substance incidents

1.6.5.2 STATE DEPARTMENT OF TAXES

32 V.S.A. § 3756 Qualification for use value appraisal:

- The Current Use Advisory Board has the power to grant current use taxation rates for agricultural and uses, if the landowner meets certain requirements, one of which is that at least one-half of his annual gross income comes from the business of farming as that term is defined in Regulation 1.175-3 issued under the Internal Revenue Code of 1954. See 32 V.S.A. § 3752(7).
- However, section 3756 enables the Advisory Board to grant the current use basis for taxation purposes for up to one year if this requirement cannot be met due to instances of "personal hardship created by personal or family disability or death, by economic disaster such as loss of farm buildings, equipment, or livestock due to fire or disease, or natural disaster such as flood or drought."

1.6.5.3 VERMONT DEPARTMENT OF HEALTH (VDH)

The VDH has broad authority to "supervise and direct the execution" of public health laws under 18 V.S.A. Chapters 1 and 3. Statutes applicable to drought situations and available to public health authorities include 18 V.S.A §§ 108, 126, 127, 130 and 131. Under 18 V.S.A. § 126(d)(1), a health order may be issued prohibiting the "transportation, sale, distribution or supplying of water" in order to prevent a public health hazard or mitigate a significant public health risk. In a severe drought, such an order might be used to maintain adequate water supplies or prohibit the distribution of tainted water. Water purification may be ordered under 18 V.S.A. § 126(d)(2) for similar reasons.

Furthermore, *emergency* health orders may be levied to prevent an "imminent and substantial public health hazard, or to mitigate an imminent and substantial significant public health risk." 18 V.S.A. § 127. Health orders are enforced by civil and criminal penalties in superior court. See 18 V.S.A. §§ 130, 131. Additionally, authorities "shall advise with municipal officers in regard to drainage, water supply and sewerage of towns and villages and in regard to the erection, construction, heating, ventilation and sanitary arrangements of public buildings." 18 V.S.A. § 108.

1.6.5.4 VERMONT EMERGENCY MANAGEMENT (VEM)

In cooperation with the federal government, the State of Vermont is responsible for the development and execution of civil preparedness programs and for providing assistance to local governments in their development of disaster preparedness plans and capabilities. The Vermont Department of Public Safety, Vermont Emergency Management Division, has been designated by the Governor as the lead coordinating agency for disaster operations

VEM is responsible for direction and control of all state emergency operations as outlined in the Vermont Drought Management Plan (VDMP). The VDMP is the framework for managing emergency response and recovery actions at all levels of government in the state. Utilizing the VDMP, VEM coordinates state, federal and private resources with regard to planning, response and recovery activities. The Drought Management Plan is an example of such coordination

between local, state and federal resources. Should a declaration of a state of emergency be warranted as a result of drought conditions, the VDMP would be the framework for response and recovery actions. VEM has broad authority over state emergency operations under 20 V.S.A. Chapter 1, §§ 1, 3, 3a, 5, 7 and 9.

1.6.5.5 LOCAL GOVERNMENTS

Municipal governments are critically important to managing and assessing the impact of drought situations. Municipal governments that own, operate or oversee a public water supply are responsible for putting in place either voluntary or mandatory water use restrictions. State level response to droughts is premised on the fact that municipalities and local authorities are taking all necessary action to manage drought situations and to protect public health and the environment under 24 V.S.A. Chapters 59, 61, 89, 117 and 118:

- For the purpose of promoting the public health, safety and welfare, chapters 59 and 61 grant basic authority to municipalities to "adopt, amend, repeal and enforce ordinances or rules for any purposes authorized by law." 24 V.S.A § 1971.
- Alternatively, water restrictions may be incorporated into local zoning, land use or water department codes. Violations of such codes would proceed either as a "civil ordinance violation pursuant to this section or in an enforcement action pursuant to the requirements of chapter 117 of this title." 24 V.S.A. § 1974(a).
- Under chapter 117, municipalities may adopt zoning regulations to promote public health, safety, prosperity, comfort, and general welfare. This includes the planning, financing and provision of public facilities like fire, police and EMS protection, schools, and water supply. See 24 V.S.A. § 4302(c)(12)(A). Municipalities may set zoning regulations to protect and preserve "outstanding water resources, including lakes, rivers, aquifers, shore lands and wetlands." 24 V.S.A. § 4302(c)(5)(B). Finally, zoning regulations "may specify acceptable standards or levels of performance required in connection with any permitted use." 24 V.S.A. § 4407(7). Though performance limits are usually aimed at limiting pollution and other activities which may create hazards, capping maximum water usage in times of severe drought may be a valid performance limit under section 4407(7).
- Chapter 118 enables local conservation commissions to promote educational activities that foster public understanding of local natural resources and conservation needs. These commissions may also make recommendations to the local planning commission or zoning board of adjustment regarding matters affecting the local environment or the natural resources of the municipality; See 24 V.S.A. § 4505
- Chapter 89 grants municipal water commissioners the power to supervise municipal water departments and "make and establish all needful water rates, charges, rules and regulations for its control and operation." 24 V.S.A. § 3313.

Finally, if drought conditions do exist, local water utilities or municipalities may recommend water restrictions in order to maintain adequate supplies of potable water available to meet normal and peak demands. These restrictions may include watering lawns and washing cars on odd or even days of the week, at night, or on weekends. The restrictions may limit hours of use,

require hand watering in lieu of sprinkler systems, or prohibit use of water for certain uses altogether. See Water Supply Rule, 7.7.3.

APPENDIX 3F - AGENCY OF NATURAL RESOURCES DROUGHT MANAGEMENT PLAN | Page 11 | 04/30/05