

DROUGHT CONTINGENCY PLAN

CITY OF GRIFFIN, GEORGIA



*Prepared By
City of Griffin
December 2010*

Drought Contingency Plan
City of Griffin, Georgia

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1.0 Drought Condition Indicators

1.1 Conditions for implementing this plan:

This Drought Contingency Plan is intended to serve as a guide for decision-making and water system management during conditions when the water system is unable to meet full water usage demand. Although drought is the most common cause of this condition, other emergencies may also be reason to implement the steps outlined in this plan. Examples might be failure of equipment, broken pipelines, natural disasters, sabotage, or any condition that causes the system to be unable to deliver enough water to meet normal requirements. Such emergencies are beyond the scope of planning for this document; therefore, for the sake of planning, the focus of this report will be on drought contingency planning.

1.2 Drought severity and stages:

Droughts are a common cycle of nature defined by long periods of less than normal rainfall. Drought severity is typically classified in terms of frequency; for example a 100-year drought would be a very severe drought with a statistical recurrence frequency of once every 100 years. A 10-year drought would be less severe and likely to happen once every 10 years. Drought classifications for a particular region are based upon long-term rainfall and stream flow records for the region. Droughts progress in stages starting with a deficit in precipitation. After a period of rainfall shortage, the second stage of drought is when soil moisture becomes depleted. The third stage, following months of low precipitation, is evidenced by low soil moisture, lower than normal stream flow and a lowering of the ground water table. Generally, the longer these conditions prevail, the more severe they become.

1.3 Drought severity indicator:

Three components of the water supply are impacted directly by drought conditions and will serve as indicators of severity:

- flow in the Flint River decreases during drought
- stored water volume in Heads Creek Reservoir decreases during drought
- storage water volume in Still Branch Reservoir decreases during drought

It is proposed that total water storage volume of the two reservoirs be used as the primary drought severity indicator. Flow in the Flint River will serve as a secondary

drought severity indicator. The methodology for applying these drought indicators is described in Section 3 of this report.

2.0 Priorities for Water Usage

2.1 The following priority list is proposed as guidance for making decisions about water restrictions. Higher priority uses are at the top of the list and lowest priorities at the bottom. During times of drought, lower priority uses of water will be restricted or curtailed depending on the severity of drought conditions as described in Section 3.

PRIORITY NUMBER	USE DESCRIPTION
1 High	Emergency facilities for essential life support. Examples: medical facilities, elderly care facilities.
2	Domestic and personal use. Examples: drinking, cooking, washing, sanitary and essential household use.
3	Essential farm uses. Examples: watering of livestock; irrigation of food crops and vegetable gardens.
4	Industrial and commercial uses. Examples: Activities related to normal production and employment levels. Commercial car washing and power washing enterprises are in the same category as other commercial use. Companies engaged in the sale of landscape plants fall into this category and with respect to watering of plants in stock.
5	Irrigation of lawns and shrubs and outdoor recreational uses.
6 Low	Use of water for wash down of streets, driveways and parking lots; water main flushing, hydrant testing, and non-commercial car washing.

3.0 Drought Condition Indicator and Restrictions on Usage

3.1 Indicator Measurements:

As mentioned in section 1.3 above, the primary drought severity indicator will be the combined volume of stored water in Still Branch Reservoir and Heads Creek Reservoir combined. This formula will give more weight to Still Branch Reservoir since its storage

volume is approximately six times the volume of Heads Creek Reservoir. Flow in the Flint River will serve as a secondary drought severity indicator.

The steps for determining Drought Condition" is as follows: Field measure the water surface elevation of each reservoir. Use Figure 1 and Figure 2 to determine the remaining storage volume of each reservoir. Combine these volumes and enter Figure 3 with the combined value, intersecting the storage line and reading the Drought Condition to the right side of the chart.

Example 1: Assume Still Branch Reservoir water surface elevation at 747 and Heads Creek at 766. Storage volumes are 2,700 and 350 million gallons respectively, for a combined 3,050 million gallons. Entering Figure 3 with this value, intersecting the sloped line we see that total storage is at 76% and reading to the right, this puts the system in the "Drought Alert" condition.

Stream flow conditions will be factored into the Drought Condition by applying the rule that if low (drought) flow in the Flint River has caused curtailment of all stream withdrawals for a total of 30 individual days during the preceding 60-day period, then the combined reservoir storage volume is reduced by 10% for purposes of determining Drought Condition. Table 2 lists the non-depletable flow values that have been approved by State and Federal agencies for the intake location on the Flint River. Withdrawals can never cause flow downstream of the intake to drop below these flow rates; therefore, withdrawal must cease whenever river flow at the site drops to these levels. River flow will be measured by a gauging station located downstream of the intake facility.

Example 2: In example 1 above, assume that this marks the 30th day during the preceding 60 days that withdrawal from the river has been disallowed due to low stream flow. Applying the above rule, the 76% storage volume would be reduced by 10% to account drought conditions in the stream. Then reading Figure 3, a 66% storage volume places the system in the Moderate Drought condition.

3.2 Restrictions on Usage

During drought conditions, lower priority uses of water are curtailed in order to preserve the available water for higher priority uses. During prolonged periods of drought, as the water supply declines, restrictions on usage are increased. Table 1 illustrates the how each water use priority listed in section 2 above is affected by varying drought conditions. The State of Georgia may impose water use restrictions that are more stringent than those prescribed under this plan; in which case the state restrictions would take precedence.

4.0 **Low Flow Protection:**

4.1 Permit conditions:

A condition of the permit for withdrawal from the Flint River is that Griffin's withdrawal shall not cause flow in the river to drop below certain minimum rates of flow as listed in Table 2. As seen in the table, the protected non-depletable flow (NDF) varies depending on whether the reservoir is above or below 70% full. When the reservoir is at 70% full or above, the NDF is fixed at 247 cubic feet per second. When the reservoir is below 70% full, the NDF varies for different months as shown in Table 2.

4.2 Monitoring of low flow:

In order to monitor low flow conditions in the Flint River a gauging station will be installed in the river nearby and downstream of the withdrawal point. Flow rate of the river at this gauging station will be monitored continuously using an electronic device, displayed at the Water Treatment Plant operations center and recorded for documentation purposes. Based upon water level in the reservoir and the measured rate of flow at the gauging station, operating personnel will know when and how much to curtail withdrawals from the river. Recorded data from the gauging station along with daily pump operating records would provide documentation that low flow protection is achieved.

In Special Condition #3 requirements state "low flows in the Flint River will be measured upstream and downstream of the intake according to the Low Flow Protection Plan".

Gauging stations are installed in the river both upstream and downstream of the withdrawal points both at Still Branch intake as well as the Flint River Pump Station located at New Salem Road. Griffin has installed automated bubbler gauges at the New Salem location which are read both manually and automatically through the SCADA system daily providing data from these gauging stations which includes pumping records and documentation demonstrating that low flow protection is achieved. Additionally an automated monitoring station is located at the base of the dam at Still Branch which monitors the flow rate of water leaving the reservoir to ensure compliance of minimum stream flow rates as required of 0.31mgd from July through November', at 0.41mgd for May, June and December', and at 0.62mgd for January through April.

5.0 **Reliable Supply Availability:**

5.1 Summary of Results:

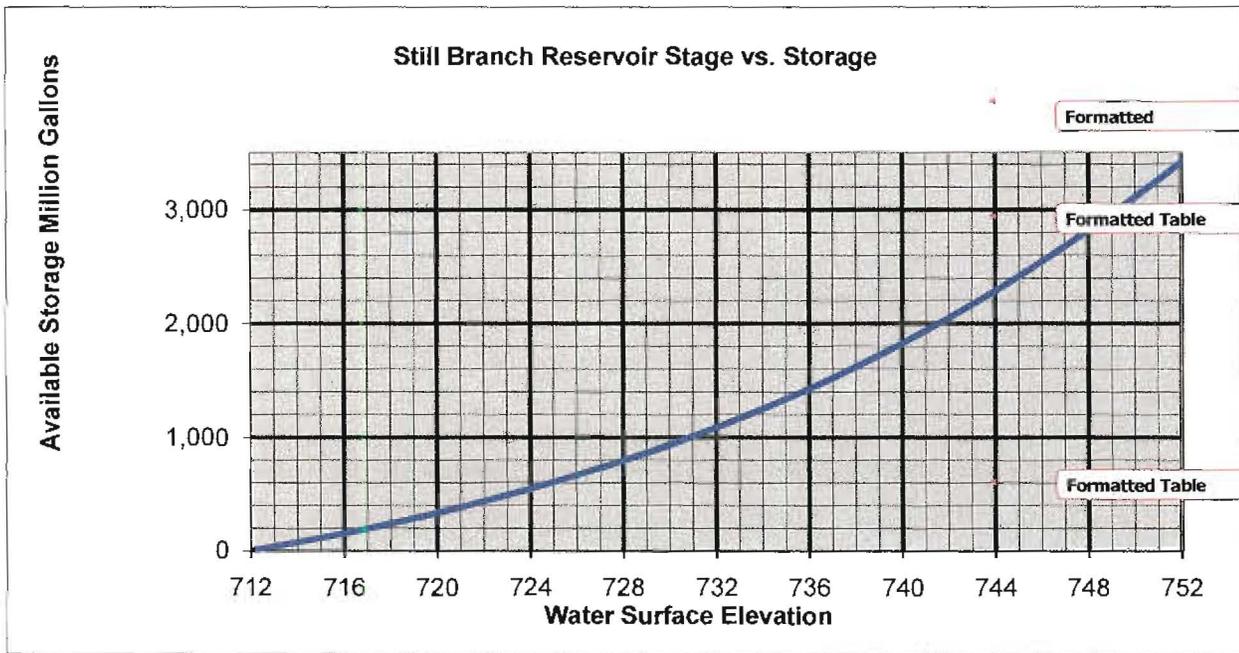
Reliable yield of the Flint River withdrawal in combination with Still Branch Reservoir is calculated to be 35 MGD. The calculation is based on the following factors:

- Calculations were based on daily flow records for the Flint River at Culloden for the 62 years of record through year 1996. The Culloden flow rates were prorated down to the size of this drainage basin at the point of withdrawal (800 square miles).
- The drought that occurred in years 1954-1955 was used as the "design" drought for the calculations.
- Withdrawal from the river is modeled at a peak pumping rate of 50 MGD, with restricted withdrawal as necessary to protect the non-depletable flow.
- Water surface elevation 712 is the approximate low water level at which full withdrawal capacity is available. Bottom invert of the lowest intake pipe in the reservoir will be at elevation 707 and a decreasing amount of flow would be available between elevation 712 and 707. For sediment storage, an average sediment surface elevation of 712 is assumed (actually the surface would be higher near the entry points and lower near the downstream end of the lake). Thus the potential sediment storage zone extends approximately from elevation 712 down to elevation 678, the lowest point in the lake. This zone has a volume of 433 million gallons and represents 11 percent of the full pool reservoir volume. Because of the very small watershed draining to the lake, and the fact that pumping can be curtailed to avoid sediment intake from the river, sediment buildup in this lake is expected to be lower than normal.
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6.0 Still Branch Flow Augmentation:

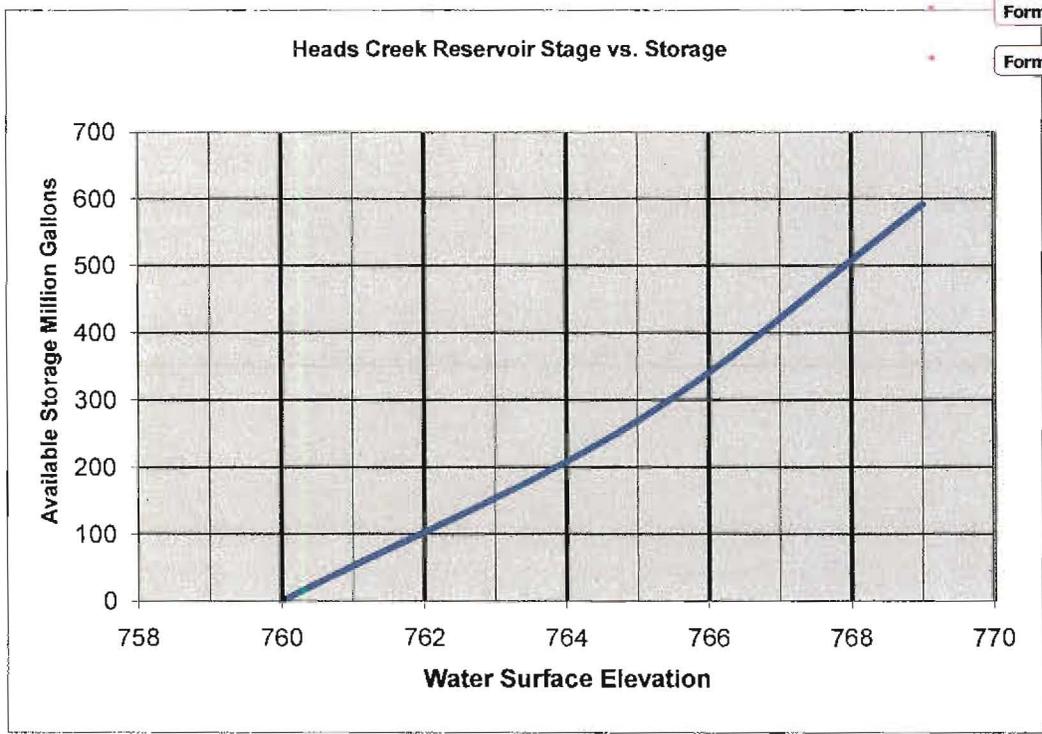
6.1 Permit conditions:

A condition of the 404 permit and the withdrawal permit is that Griffin will augment flow in Still Branch below the dam with controlled release of water from the dam. This will be accomplished with a pipe and valves at the dam that allow for varying the rate and the depth of release water in order to more closely match natural characteristics. The target flow in Still Branch below the dam will be 0.31 MGD for July – November; 0.41 MGD for May, June and December; 0.62 MGD for January – April. An automated monitoring station will be constructed to monitor flow rates in Still Branch.



Water Surface Elevation (MSL)	Surface Area (Acres)	Available Storage Vol. (Mil Gal)	Percent of Full Volume
752	476	3,416	100%
750	463	3,110	91%
748	434	2,817	82%
746	408	2,543	74%
744	382	2,286	67%
742	356	2,045	60%
740	330	1,822	53%
738	305	1,615	47%
736	282	1,424	42%
734	261	1,247	37%
732	241	1,083	32%
730	221	933	27%
728	204	794	23%
726	190	666	19%
724	177	548	16%
722	164	435	13%
720	150	333	10%
718	136	239	7%
716	127	153	4%
714	117	73	2%
712	107	0	0%

Drought
2007'IA1



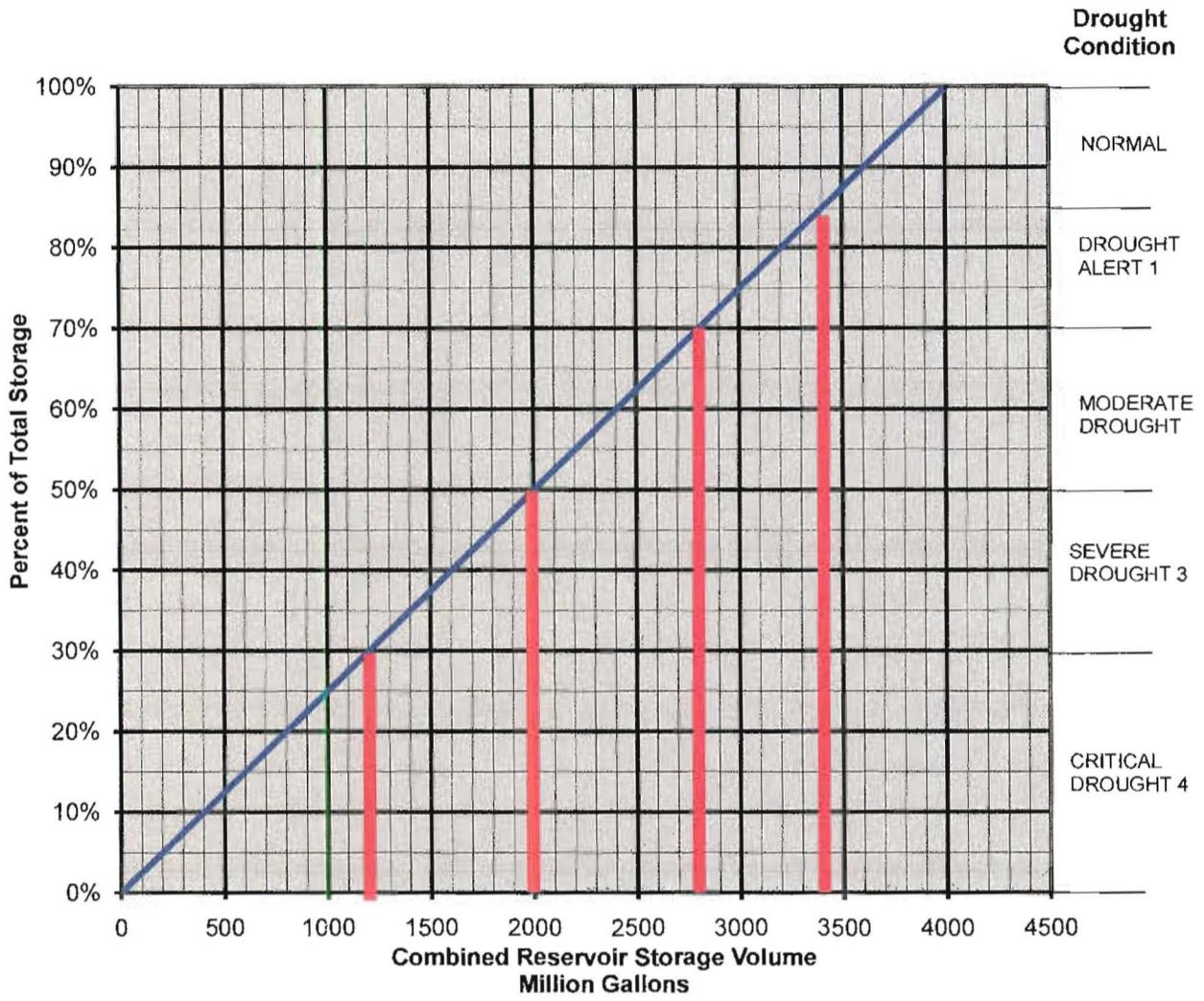
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<u>Water Surface Elevation (MSL)</u>	<u>Available Storage Vol. (Mil. Gals.)</u>	<u>Percent of Full Volume</u>
760	0	0%
765	269	46%
769	591	100%

Bottom of reservoir is elevation 750. This chart is for lowest usable water elevation of 760 which allows for siltation (128 Mil. Gal.), weir setting and head losses from lake to pumps.

Drought Condition vs Reservoir Storage



RESTRICTIONS ON WATER USE FOR VARIOUS DROUGHT CONDITIONS

Drought Condition	Water Use Priority					
	1 Emergency & Health Facilities	2 Domestic & Personal Use	3 Essential Farm & Food Production	4 Industrial & Commercial	5 Landscape Irrigation, recreational	6 Washing cars, streets, etc.
Normal (Non- drought) (85- 100%)	None	None	None	None	State-wide (EPD) day of week restrictions	State-wide (EPD) day of week restrictions
	Employ sound water conservation practices.					
Drought Alert (70-85%)	None	None	None	None	Restrict to fewer days with limited hours	Prohibited
	Use public awareness ads with local media to alert public to conditions and restrictions.					
Moderate Drought (50-70%)	None	None	None	Voluntary Ration Limit	Restricted days & hours + surcharge rate	Prohibited
	Increase use of public education program and local media sources to explain the drought conditions and water use restrictions. Enforcement of prohibited use will be a fine for each offense.					
Severe Drought (30-50%)	None	Voluntary Ration Limits	Voluntary Ration Limits	Ration Limits, Surcharge for exceeding ration	Prohibited	Prohibited
	More intensive use of public education programs and local media sources to explain the drought/emergency conditions and imposed water restrictions. Enforcement of prohibited use will be a fine for each offense.					
Critical Drought (0-30%)	Voluntary Ration Limits	Ration Limits, Surcharge for exceeding ration	Ration Limits, Surcharge for exceeding ration	Ration Limits, Surcharge for exceeding ration	Prohibited	Prohibited
	Continue intensive use of public education programs and local media sources to explain the drought/emergency conditions and imposed water restrictions. Enforcement will be to issue a fine for the first offense and to disconnect service for any subsequent offense.					

RESTRICTIONS

TABLE 2
Low Flow Protection

Month	Non-Depletable Flow When Still Branch Reservoir Storage At or Above 70% Full (cfs)	Non-Depletable Flow When Still Branch Reservoir Storage Below 70% Full (cfs)
January	247	235
February	247	247
March	247	247
April	247	247
May	247	111
June	247	60
July	247	60
August	247	60
September	247	60
October	247	60
November	247	60
December	247	136

APPENDIX A

GEORGIA EPD DROUGHT CONTINGENCY RULES WITH COMMENTARY

DROUGHT CONTINGENCY RULES
WITH COMMENTARY

1-3-6-.07 Surface Water Withdrawals. Amended

Rule(3)9. The applicant or permittee must provide to the Director for approval a drought contingency plan prepared in accordance with the following guidelines. The plan should include alternative system and resource management strategies to be implemented under drought conditions that may severely reduce the availability of the resource. The applicant must provide the following items in the plan (or a statement as to why the item is not an appropriate part of the plan):

GUIDELINES	COMMENTARY
<p>(i) Drought condition indicators;</p> <p>(I) The applicant or permittee must develop a system for determining drought severity based on some approved indicator, e.g.:</p> <ul style="list-style-type: none"> I. Streamflow levels; II. Ground water levels; III. Reservoir storage or levels; IV. Other. 	<p>Item (i) should describe various conditions which would require the implementation of the drought contingency plan (DCP). These conditions are usually drought related indicators such as high system demands, low pressure, withdrawals approaching or exceeding permitted limits, etc. However, shortages may also be caused by natural disasters, equipment failures, etc.</p> <p>The permittee can track drought severity through the use of gages to indicate streamflow volume and/or reservoir levels. Such gages range from the simple surface water level staff gage to continuous surface level/flow volume stream gage. Side channel stilling wells can also be used to measure surface water levels and flow volume.</p>
<p>(ii) Potable water use priorities program;</p> <p>(I) The following order of potable water use priorities is generally recommended but may be modified as needed based on local conditions:</p> <ul style="list-style-type: none"> I. Emergency facilities for essential life support measures; II. Domestic and personal uses, including drinking, cooking, washing, sanitary and health related; III. Farm uses; IV. Industrial uses (including those industries on public water systems); V. Other uses such as lawn sprinkling, non-commercial car washing, garden watering, etc.; VI. Outdoor recreational uses. <p>(II) Conditions or events that put priority use system into effect;</p> <p>(III) Adopted priority use system for service during periods of water shortages;</p> <p>(IV) Restrictions on lower priority uses (including enforcement procedures);</p> <p>(V) Rationing and/or other emergency procedures</p>	<p>For long term drought related conditions a multi-phase program of restrictions on non-essential water use is recommended. Initial phases can be voluntary progressing to mandatory based on the duration and severity of the drought. Indicators such as those listed under item (I) should be identified which would trigger each phase of restrictions should be included in the plan as well as enforcement procedures and penalties for violations of restrictions.</p> <p>Examples of restrictions on lower priority uses include odd/even, time of day, etc.. restrictions on nonessential outdoor water uses (washing of driveways, lawn watering, non-commercial car washing, etc..).</p> <p>An extended, severe drought or natural disaster which affects the ability of the water system to meet normal demands could lead to restrictions on commercial/industrial usage and eventual curtailment of all service except for essential sanitary, health related and emergency facilities.</p> <p>The success of priority use will be reflected in the % reduction in water treated at the raw water treatment plant.</p>

(iii) Low flow protection;

(I) For applications for new or modified permits to withdraw, impound or divert surface water:

No permit will be issued by the Director which authorizes the depletion of the instream flow established for the withdrawal, diversion or impoundment of surface water, except for periods of Emergency Water Shortage as described in Subsection 391-3-6-.07(12);

(II) For applications for new or modified permits, the applicant will be required to pass instream flow at or immediately downstream of the point of withdrawal, diversion or impoundment so long as it is available from upstream. When upstream flows drop below the required instream flow at the point of withdrawal, diversion or impoundment, the applicant will be required to pass that upstream flow. The Instream Flow required for new or modified permits in this subsection shall be:

I. The 7Q10 flow, if no unreasonable adverse effects to the stream or other water users will occur from the withdrawal, diversion or impoundment; or

II. The Non-Depletable Flow, as established by the Director, if probable impacts of the withdrawal, diversion or impoundment would occur to other water users; or

III. Other appropriate instream flow limit, as established by the Director;

(III) Low-flow monitoring plan that outlines applicant's procedure to monitor and protect instream flow below the point of withdrawal. Where applicable, the applicant must develop a plan for monitoring stream flow so that the instream flow limit can be protected. The monitoring plan must determine stream flow based on one of the following:

- I. U.S.G.S staff gage or continuous recording station;
- II. Other staff gage as approved by the Director;
- III. Weir;
- IV. Other.

Permittees with grandfathered withdrawals (withdrawals existing when legislation requiring surface water withdrawal permits was passed) can normally withdraw at their permitted rate if the water is available. Permittees seeking to increase withdrawal must protect streamflow for the incremental increase.

For new withdrawals, the applicant must allow a set instream flow to pass below the withdrawal point. This flow may be the 7Q10 (the minimum average flow for 7 consecutive days with a 10-year recurrence interval) or some other Non-Depletable Flow (NDF) as determined by the Director. This NDF may include downstream demand from prior permitted water users and/or downstream needs associated with minimizing environmental impacts.

The low-flow monitoring plan can be tied in with the device or devices used as drought indicators and should serve as a tool that allows the permittee to maximize system efficiency while protecting the resource.

The applicant should detail any wastewater discharge (if to the same source) that may serve to reduce withdrawal impacts.

(iv) Water storage available to ensure availability of raw water to applicant through a critical drought period. Examples of suitable critical drought periods include but are not limited to: 50-year recurrence interval; 1954-1956 drought; 1984-1988 drought. The definition of available storage should include:

- (I) Yield vs. drought return period;
- (II) Storage type, e.g., main stream or off-stream supplemental;
- (III) Any available alternate sources of finished and raw water such as ground water, interconnections, contractual agreements.

Where storage of water is used to increase water withdrawal reliability, the permittee must analyze the storage/withdrawal system using a proven engineering method. An example would be to route selected drought flows through the system to determine either the maximum withdrawal quantity that can be sustained through the drought or to determine the amount of storage required for a desired withdrawal. Such an analysis may be for a single on-stream reservoir, for multiple reservoirs or for off-stream storage with high flow pumping.

The applicant must also demonstrate the reliability of any alternative sources such as those listed in (III). The applicant must provide evidence that any contracted water supplier must have the capacity to provide water continuously through drought periods.

**PROPOSED RULES OF
GEORGIA DEPARTMENT OF NATURAL RESOURCES
ENVIRONMENTAL PROTECTION DIVISION**

**CHAPTER 391-3-30
OUTDOOR WATER USE**

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391-3-30-.01 Definitions

When used in this Chapter:

(1) "Address" means the "house number" (a numeric or alphanumeric designation) that, together with the street name, describes a physical location of a specific property. "Even numbered address" means a house number ending with the number 0, 2, 4, 6, 8, or no house number. "Odd numbered address" means a house number ending with the number 1, 3, 5, 7, or 9.

(2) "Declared Drought Response Level" means one of four levels of drought that can be declared based on the severity of drought conditions, with one being the least severe and four being the most severe.

391-3-30-.02 Applicability of Rule

These rules apply to any entity, and its customers, permitted by the Georgia Environmental Protection Division (EPD) for water withdrawal or for operation of a drinking water system.

391-3-30-.03 Outdoor Water Use Schedule During Non-Drought Periods

- (1) Outdoor water use other than exempted activities shall occur only as follows:
- (a) Odd-numbered addresses: outdoor water use is allowed on Tuesdays, Thursdays and Sundays.
 - (b) Even-numbered addresses: outdoor water use is allowed on Mondays, Wednesdays and Saturdays.

April 23, 2004

391-3-30-.04 Outdoor Water Use Schedule During Declared Drought Response Levels

- (1) The Director of the Environmental Protection Division is authorized to make drought declarations.
- (2) During declared drought conditions, outdoor water use other than activities exempted in 391-3-30-.05, shall occur only during scheduled hours on the scheduled days.
- (3) Declared Drought Response Level One – Outdoor water use may occur on scheduled days within the hours of 12:00 midnight to 10:00 a.m. and 4:00 p.m. to 12:00 midnight.
 - (a) Scheduled days for odd-numbered addresses are Tuesdays, Thursdays and Sundays.
 - (b) Scheduled days for even-numbered addresses are Mondays, Wednesdays and Saturdays.
 - (c) Use of hydrants for any purpose other than firefighting, public health, safety or flushing is prohibited.
- (4) Declared Drought Response Level Two – Outdoor water use may occur on scheduled days within the hours of 12:00 midnight to 10:00 a.m.
 - (a) Scheduled days for odd-numbered addresses are Tuesdays, Thursdays and Sundays.
 - (b) Scheduled days for even-numbered addresses and golf course fairways are Mondays, Wednesdays and Saturdays.
 - (c) The following uses are prohibited:
 - 1) Using hydrants for any purpose other than firefighting, public health, safety or flushing.
 - 2) Washing hard surfaces, such as streets, gutters, sidewalks and driveways except when necessary for public health and safety.
- (5) Declared Drought Response Level Three – Outdoor water use may occur on the scheduled day within the hours of 12:00 midnight to 10:00 a.m.
 - (a) The scheduled day for odd-numbered addresses is Sunday.
 - (b) The scheduled day for even-numbered addresses and golf course fairways is Saturday.

(c) The following uses are prohibited:

- 1) Using hydrants for any purpose other than firefighting, public health, safety or flushing.
- 2) Washing hard surfaces, such as streets, gutters, sidewalks, driveways, except when necessary for public health and safety
- 3) Filling installed swimming pools except when necessary for health care or structural integrity.
- 4) Washing vehicles, such as cars, boats, trailers, motorbikes, airplanes, golf carts.
- 5) Washing buildings or structures except for immediate fire protection.
- 6) Non-commercial fund-raisers, such as car washes.
- 7) Using water for ornamental purposes, such as fountains, reflecting pools, and waterfalls except when necessary to support aquatic life.

(6) Declared Drought Response Level Four – No outdoor water use is allowed, other than for activities exempted in 391-3-30-.05, or as the EPD Director may order.

391-3-30-.05 Exemptions

(1) This rule shall not apply to the following outdoor water uses:

- (a) Capture and re-use of cooling system condensate or storm water in compliance with applicable local ordinances
- (b) Re-use of gray water in compliance with applicable local ordinances

(2) The following established landscape water uses are exempt from the outdoor water use schedules of this rule.

- (a) Use of reclaimed wastewater by a designated user from a system permitted by EPD to provide reclaimed wastewater.
- (b) Irrigation of personal food gardens.

(3) Newly (in place less than thirty days) installed landscapes are subject to the following:

- (a) Irrigation of newly installed landscapes is allowed any day of the week, but only during allowed hours for the drought response level in effect, for a period of 30 days following installation. No watering is allowed during Drought Response Level Four.
- (b) For new landscapes installed by certified or licensed professionals, commercial exemptions apply.

April 23, 2004

(4) The following golf course outdoor water uses are exempt from the outdoor water use schedules of this rule.

- (a) Use of reclaimed wastewater by a designated user from a system permitted by EPD to provide reclaimed wastewater.
- (b) Irrigation of fairways during times on non-drought and Declared Drought Response Level One.
- (c) Irrigation of tees during times of non-drought and Declared Drought Response Levels One, Two and Three.
- (d) Irrigation of greens.

(5) The following commercial outdoor water uses are exempt from the outdoor water use schedules of this rule.

- (a) Professionally certified or licensed landscapers, golf course contractors, and sports turf landscapers: during installation and 30 days following installation only. Professional landscapers must be certified or licensed for commercial exemptions to apply.
- (b) Irrigation contractors: during installation and as needed for proper maintenance and adjustments only.
- (c) Sod producers.
- (d) Ornamental growers.
- (e) Fruit and vegetable growers.
- (f) Retail garden centers.
- (g) Hydro-seeding.
- (h) Power-washing.
- (i) Construction sites.
- (j) Producers of food and fiber.
- (k) Car washes.
- (l) Other activities essential to daily business.
- (m) watering-in of pesticides and herbicides on turf.

391-3-30-.06 Local and Regional Options

(1) Local and regional water providers are authorized to implement additional outdoor water use restrictions within their jurisdictions. Action items to consider at the local/regional level include, but are not limited to, the following: developing system integration and interconnection to reduce drought vulnerability, placing additional water use restrictions on specific commercial uses, putting water conservation based rates in place (increasing block/summer surcharge) and placing additional restrictions on outdoor water use.

April 23, 2004

(2) Local and regional water providers may request approval of alternative days for outdoor water use for purposes of enforcement, peak water usage, timing of recovery days, and other valid reasons. Approval shall be contingent upon:

- (a) Written notification to, and approval by, EPD of the alternate watering schedule; and
- (b) Enactment of a local ordinance allowing no more than 3 days a week outdoor watering during time(s) of day consistent with the level of drought as set forth in sections 391-3-30-.03 and -.04 of this rule.
- (c) Regional consistency.

Georgia Department of Natural Resources

2 Martin Luther King, Jr. Drive, S.E. , Suite 1058 East, Atlanta, Georgia 30334
Lonice C. Barrett, Commissioner
Carol A. Couch, Ph.D., Director
Environmental Protection Division
404/656-3094

January 27, 2004

Honorable Walker Cook, Jr.
Mayor, City of Griffin
P. O. Box T
Griffin, GA 30224

Re: New Surface Water Withdrawal Permits No. 114-1104-03 and No. 114-1191-02

Dear Mayor Cook:

In accordance with the Georgia Water Quality Control Act, as amended, two new Permits to Withdraw Surface Water have been issued by the Division and are hereby enclosed. Specific conditions of compliance are provided on pages 1, 2 and 3 of the Permits. Your attention is particularly directed to paragraph (6) of the Special Conditions Section of the Permits, which requires that a new monthly reporting of daily water withdrawals per each source be submitted to the Division by the 15th of the following month. Forms for these reporting requirements are being sent to you. Also, the withdrawal limits on page one of the Permits reflect the amount of water the service area, for this regional reservoir, will need in the year 2050.

If you have any questions, please write or contact me at the phone number above.

Sincerely,



Ade Oke, Coordinator
Surface Water Unit

Enclosures

cc: Lisa Hutcheson
Ronald L. Harris, P.E.

ENVIRONMENTAL PROTECTION DIVISION
DEPARTMENT OF NATURAL RESOURCES
STATE OF GEORGIA
PERMIT TO WITHDRAW, DIVERT OR IMPOUND SURFACE WATER

PERMITTEE'S NAME: City of Griffin

PERMIT NUMBER: 114-1191-02 (New)

PERMITTEE'S ADDRESS: P.O. Box T, Griffin, Georgia 30224

In accordance with the provisions of the Georgia Water Quality Control Act, (O.C.G.A. § 12-5-20 et seq.) as amended, and the Rules and Regulations for Water Quality Control, Chapter 391-3-6, promulgated pursuant thereto, this permit is issued to withdraw surface water from the (source) Flint River for the purpose of filling Still Branch Reservoir for municipal water supply.

The permittee must comply with the following limitations:

- (1) Maximum 24 hour: Withdrawal 50.0 MGD; Impoundment ___ MGD; Diversion _____ MGD
- (2) Not to exceed a monthly average of 50.0 MGD

This permit is conditioned upon the permittee complying with the following:

STANDARD CONDITIONS

- (1) The provisions of the Water Quality Control Act, as amended, or any of the Rules and Regulations promulgated thereto;
- (2) This permit shall not be transferred except with the approval of the Division;
- (3) The use of surface water is limited to the quantities and purposes as specified herein;
- (4) The permittee shall submit annually to the Division, within 30 days of completion of the calendar year, a report listing for each month of the previous year:
 - a. The gallons per day withdrawn, based on an average of the daily withdrawals for the month;
 - b. The maximum 24 hour withdrawal;
- (5) And the attached special conditions which are hereby made a part of this permit.

In accordance with the application dated 4/1/03 and in conformity with the statements and supporting data entered therein or attached thereto, all of which are filed with the Environmental Protection Division of the Department of Natural Resources and are hereby made part of this Permit.

This Permit is effective from the date first above written and is subject to revocation pursuant to the Georgia Water Quality Control Act, as amended, O.C.G.A. § 12-5-31 (k).

Absent prior revocation in accordance with the above language, this Permit shall expire on the 31st day of December, 2013.

DIRECTOR'S SIGNATURE



DATE:

~~December 31, 2003~~
JANUARY 26, 2004

Director
Environmental Protection Division
Department of Natural Resources

SPECIAL CONDITIONS

1. The City of Griffin (City) Flint River withdrawal is located just upstream (approximately 1,500 feet) from the confluence with Still Branch, in Pike County.
2. The City will cease withdrawals from the Flint River according to the schedule outlined in the table below. Withdrawals would not resume until flows (in cubic feet per second (cfs)) reach levels under which the streamflows are greater than outlined in the table below. A continuous flow monitoring station must be established within one-mile downstream of the withdrawal point on the Flint River.

Month	Streamflow in the Flint River below the intake site for withdrawals made when the Still Branch Reservoir is at or above 70% full (cfs)	Streamflow in the Flint River below the intake site for withdrawals made when the Still Branch Reservoir is below 70% full (cfs)
January	247	235
February	247	247
March	247	247
April	247	247
May	247	111
June	247	60
July	247	60
August	247	60
September	247	60
October	247	60
November	247	60
December	247	136

3. The City will install, before any withdrawals, a continuous flow monitoring station within one-mile downstream of the Flint River intake structure in order to determine when the low streamflows occur. A calibrated rating curve will be established for the gage to relate water level to discharge, and shall be recalibrated according to the standard methods for discharge gages established by the U.S. Geological Survey. These records must be kept on file at the water treatment plant.
4. The City must sample annually in October from the City's established biological monitoring station in the vicinity of the flow station following EPA's Rapid Bioassessment Protocols (EPA 841-B-99-002)(RBA) for periphyton, benthic macroinvertebrates, fish, and habitat.
5. The City must submit annually to the Environmental Protection Division (EPD), before March 1 of the current calendar year for the previous year, a report that includes the following:
 - a. The annual sampling, in October, for periphyton, benthic macroinvertebrates, fish, and habitat.
 - b. The consumptive loss of water to surface waters of the State of Georgia due to the water withdrawn via this Permit and all other EPD Surface Water Withdrawal Permits issued to the City. This data must be presented as the average for each calendar month (in mgd and as a percentage) of the previous year. Significant changes in the consumptive water use trends over the service area may need to be reviewed by the EPD.
 - c. The Unaccounted for Water for the previous year as a percentage of water withdrawn via this Permit and all other EPD Surface Water Withdrawal Permits issued to the City.

SPECIAL CONDITIONS

- d. An annual average estimate of all water transferred out of or in to the Flint River Basin (in mgd). The estimate should include the following:
 - i. Water that originates in the Flint River Basin but is transferred by the City or an entity that purchases water from the City and then is discharged and/or consumed in another river basin, broken down by individual distribution systems or industries that received the transferred water and river basin into which it is transferred.
 - ii. Water that originates in the Flint River Basin but is transferred by the City, or an entity that purchases water from the City, and then is returned to the Flint River Basin by the City or an entity that purchases water from the City, broken down by individual distribution systems or industries that returned the transferred water.
 - iii. Water that does not originate in the Flint River Basin but is transferred into and discharged and/or consumed within the Flint River Basin by the City, broken down by individual distribution systems or industries supplying the transferred water and the river basin in which the water originates.
6. In addition to Standard Condition number (4), the City must submit to the EPD a monthly Surface Water Withdrawal Report for all raw water withdrawals for the previous month associated with this permit. Also, this requirement pertains to all other EPD Surface Water Withdrawal Permits issued to the City.
7. The City must submit to the EPD a five-year Water Conservation Progress Report pursuant to the completed Water Conservation Plan no later than December 31, 2008. Future modifications and renewals of this Permit and all other EPD Surface Water Withdrawal Permits issued to the City will be linked to appropriate implementation of the Water Conservation Plan. This Progress Report should include any actions and/or improvements made to conserve water and reduce water losses (e.g., leak detection and leak repair, meter installation and calibration, meter replacement, summer and peak use surcharges, education efforts, enforcement of ultra-low flow plumbing fixtures, etc.). The Water Conservation Report must also include per capita use trends and unaccounted for water trends.
8. The City must submit to the EPD an updated 20-year water demand projections for the service area of Coweta County, Meriwether County, Pike County and Spalding County broken down by residential, commercial and industrial customers no later than March 2004.
9. The City must initiate action designed to address violations of water quality standards indicated by any of the monitoring results associated with this Permit that are caused by or related to the operation of the Flint River intake.
10. The reporting requirements associated with this Permit will begin once the reservoir is complete.

PERMIT MODIFICATION

The permittee may seek modification of any of the terms of an unexpired permit upon written request to the Director.

ENVIRONMENTAL PROTECTION DIVISION
DEPARTMENT OF NATURAL RESOURCES
STATE OF GEORGIA
PERMIT TO WITHDRAW, DIVERT OR IMPOUND SURFACE WATER

PERMITTEE'S NAME: City of Griffin

PERMIT NUMBER: 114-1104-03 (New)

PERMITTEE'S ADDRESS: P.O. Box T, Griffin, Georgia 30224

In accordance with the provisions of the Georgia Water Quality Control Act, (O.C.G.A. § 12-5-20 et seq.) as amended, and the Rules and Regulations for Water Quality Control, Chapter 391-3-6, promulgated pursuant thereto, this permit is issued to withdraw surface water from the (source) Still Branch Reservoir for the purpose of municipal water supply.

The permittee must comply with the following limitations:

- (1) Maximum 24 hour: Withdrawal 48.0 MGD; Impoundment ____ MGD; Diversion ____ MGD
- (2) Not to exceed a monthly average of 42.0 MGD

This permit is conditioned upon the permittee complying with the following:

STANDARD CONDITIONS

- (1) The provisions of the Water Quality Control Act, as amended, or any of the Rules and Regulations promulgated thereto;
- (2) This permit shall not be transferred except with the approval of the Division;
- (3) The use of surface water is limited to the quantities and purposes as specified herein;
- (4) The permittee shall submit annually to the Division, within 30 days of completion of the calendar year, a report listing for each month of the previous year:
 - a. The gallons per day withdrawn, based on an average of the daily withdrawals for the month;
 - b. The maximum 24 hour withdrawal;
- (5) And the attached special conditions which are hereby made a part of this permit.

In accordance with the application dated 4/1/03 and in conformity with the statements and supporting data entered therein or attached thereto, all of which are filed with the Environmental Protection Division of the Department of Natural Resources and are hereby made part of this Permit.

This Permit is effective from the date first above written and is subject to revocation pursuant to the Georgia Water Quality Control Act, as amended, O.C.G.A. § 12-5-31 (k).

Absent prior revocation in accordance with the above language, this Permit shall expire on the 31st day of December, 2013.

DIRECTOR'S SIGNATURE:



DATE:

~~December 31, 2003~~
January 26, 2004

Director

Environmental Protection Division
Department of Natural Resources

SPECIAL CONDITIONS

1. The City of Griffin (City) Still Branch Reservoir is located approximately 3,000 feet upstream from the confluence of the Flint River, in Pike County.
 2. Water in Still Branch Reservoir may not be withdrawn by, released for, or otherwise utilized by any other entity or for any purpose, except via this Permit for public water supply within the service area of Coweta County, Meriwether County, Pike County and Spalding County and maintaining streamflow, without first modifying this Permit.
 3. The City must pass a minimum streamflow just below the Still Branch Reservoir dam equal to 0.31 million gallons per day (mgd) for July through November; at 0.41 mgd for May, June and December; and at 0.62 mgd for January through April.
 4. The City will install, before any withdrawals, the following:
 - a. A water-level gage in the reservoir. This gage will be read and the readings recorded daily in order to determine the Still Branch Reservoir storage volume conditions. A calibrated elevation/storage curve will be established for the water-level gage to relate water level to impounded volume, and shall be recalibrated according to standard methods for such gages established by the U.S. Geological Survey. These records must be kept on file at the water treatment plant.
 - b. A pipe and valve on the reservoir outlet that would allow for varying the rate of flow being withdrawn and allow for withdrawing water from various depths in order to more closely match downstream chemical and thermal characteristics.
 - c. Water quality monitoring station that will continuously monitor the water quality of the release water below the dam. The monitoring data for dissolved oxygen, pH, temperature and flow must be recorded via the water plant SCADA system and be stored at the water treatment plant.
 - d. Water quality monitoring station that will monitor on a weekly basis the water quality, a vertical profile at multiple depths, of the raw water within the reservoir. The monitoring data for dissolved oxygen, pH, temperature and flow must be recorded and be stored at the water treatment plant.
 5. The City must submit annually to the Environmental Protection Division (EPD), before March 1 of the current calendar year for the previous year, a report that includes the following:
 - a. The daily average test results for dissolved oxygen, pH, and temperature from the release water below the dam and weekly average test results of the raw water within the reservoir.
 - b. The monthly test results for chlorophyll-a from the raw water pumping station within the reservoir.
 - c. The daily average flow from the release water in the diversion channel and the average weekly elevation and associated storage volume.
 - d. The consumptive loss of water to surface waters of the State of Georgia due to the water withdrawn via this Permit and all other EPD Surface Water Withdrawal Permits issued to the City. This data must be presented as the average for each calendar month (in mgd and as a percentage) of the previous year. Significant changes in the consumptive water use trends over the service area may need to be reviewed by the EPD.
 - e. The Unaccounted for Water for the previous year as a percentage of water withdrawn via this Permit and all other EPD Surface Water Withdrawal Permits issued to the City.
 - f. An annual average estimate of all water transferred out of or in to the Flint River Basin (in mgd). The estimate should include the following:
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SPECIAL CONDITIONS

- i. Water that originates in the Flint River Basin but is transferred by the City or an entity that purchases water from the City and then is discharged and/or consumed in another river basin, broken down by individual distribution systems or industries that received the transferred water and river basin into which it is transferred.
 - ii. Water that originates in the Flint River Basin but is transferred by the City, or an entity that purchases water from the City, and then is returned to the Flint River Basin by the City or an entity that purchases water from the City, broken down by individual distribution systems or industries that returned the transferred water.
 - iii. Water that does not originate in the Flint River Basin but is transferred into and discharged and/or consumed within the Flint River Basin by the City, broken down by individual distribution systems or industries supplying the transferred water and the river basin in which the water originates.
6. In addition to Standard Condition number (4), the City must submit to the EPD a monthly Surface Water Withdrawal Report for all raw water withdrawals for the previous month associated with this permit. Also, this requirement pertains to all other EPD Surface Water Withdrawal Permits issued to the City.
7. The City must submit to the EPD a five-year Water Conservation Progress Report pursuant to the completed Water Conservation Plan no later than December 31, 2008. Future modifications and renewals of this Permit and all other EPD Surface Water Withdrawal Permits issued to the City will be linked to appropriate implementation of the Water Conservation Plan. This Progress Report should include any actions and/or improvements made to conserve water and reduce water losses (e.g., leak detection and leak repair, meter installation and calibration, meter replacement, summer and peak use surcharges, education efforts, enforcement of ultra-low flow plumbing fixtures, etc.). The Water Conservation Report must also include per capita use trends and unaccounted for water trends.
8. The City must submit to the EPD an updated 20-year water demand projections for the service area of Coweta County, Meriwether County, Pike County and Spalding County broken down by residential, commercial and industrial customers no later than March 2004.
9. The City must initiate action designed to address violations of water quality standards indicated by any of the monitoring results associated with this Permit that are caused by or related to the operation of the Still Branch Reservoir.
10. The Still Branch Reservoir is designed and approved for an **annual average** safe dependable yield of 35.0 mgd. The withdrawal limits on the first page represent the highest quantity that can be taken on any given month (monthly average) and day (24 hour maximum) to yield 35 mgd **annual average**.
11. The City must obtain a respective "Permit to Operate a Public Water System" from the EPD before supplying any water from the Still Branch Reservoir to the public drinking water distribution system.
12. The reporting requirements associated with this Permit will begin once the reservoir is complete.

PERMIT MODIFICATION

The permittee may seek modification of any of the terms of an unexpired permit upon written request to the Director.
