

GUADALUPE COUNTY GROUNDWATER CONSERVATION DISTRICT

MANAGEMENT PLAN DECEMBER 09, 2022 – DECEMBER 09, 2027

Effective: 12/09/2022 – 12/09/2027

Texas Water Development Board

P.O. Box 13231, 1700 N. Congress Ave.
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December 9, 2022

Ms. Kelley Cochran
General Manager
Guadalupe County Groundwater Conservation District
P.O. Box 1221
Seguin, TX 78156

Dear Ms. Cochran,

The purpose of this letter is to notify you that the groundwater management plan for the Guadalupe County Groundwater Conservation District required by Texas Water Code § 36.1072 is administratively complete in accordance with Texas Water Code § 36.1071(a) and (e). The policies, plans, and opinions in the groundwater management plan represent those of the District and not those of the Texas Water Development Board.

We received the groundwater management plan for the administrative completeness review on October 14, 2022, and it was approved on December 9, 2022. Included with this letter is your District Groundwater Management Plan Certificate of Administrative Completeness.

Thank you for participating in this effort and contributing to the future of groundwater conservation and management in the state of Texas. Your next five-year management plan is due on December 9, 2027.

If you have any questions or concerns, please contact Stephen Allen of our Groundwater Technical Assistance Department at 512-463-7317 or stephen.allen@twdb.texas.gov.

Sincerely,

Jeff Walker
Executive Administrator

Enclosure

c w/o enc: Stephen Allen, P.G., Groundwater
Natalie Ballew, P.G., Groundwater
Abiy Berehe, P.G., Texas Commission on Environmental Quality
Peggy Hunka, P.G., Texas Commission on Environmental Quality

Our Mission

Leading the state's efforts in
ensuring a secure water future
for Texas and its citizens

Board Members

Brooke T. Paup, Chairwoman | George B. Peyton V, Board Member
Jeff Walker, Executive Administrator

Recognition of Achievement


Presented to the

Guadalupe County Groundwater Conservation District

in recognition of completing the

District Groundwater Management Plan

approved on December 9, 2022. A review of the management plan has documented that the plan is administratively complete and in compliance with Texas Water Code §36.1071 and 31 TAC 356.



Jeff Walker
Executive Administrator

Texas Water 
Development Board

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1. District Mission

The Mission of the Guadalupe County Groundwater Conservation District (GCGCD, District) is to conserve, preserve, protect, and prevent waste of groundwater resources. It shall be the policy of the Board of Directors that the most efficient use of groundwater in the District is to provide for the needs of the citizens and ensure growth for future generations. The Board of Directors, with the cooperation of the citizens of the District, shall implement this management plan (Plan) and its accompanying rules to achieve this goal. GCGCD shall also establish, as part of this Plan, the policies of water conservation, public information dissemination and technical research by cooperation and coordination with the citizens of the District and equitable enforcement of the Plan and its accompanying rules.

2. Purpose of the Management Plan

The GCGCD recognizes that the groundwater resources of the region are of vital importance to the continued economic well-being of citizens, landowners, agriculture, economy, environment, groundwater owners, and long-term use of the resource within the District. The District will endeavor to evaluate the highest practicable level of groundwater production that can be achieved balanced along with conservation, preservation, and protection of the resource and private property rights. This Plan addresses the following management goals:

- 1) Providing the most efficient use of groundwater
- 2) Controlling and preventing waste of groundwater
- 3) Controlling and preventing subsidence
- 4) Addressing conjunctive surface water management issues
- 5) Addressing natural resource issues
- 6) Addressing drought conditions
- 7) Addressing conservation, recharge enhancement, rainwater harvesting, precipitation enhancement, or brush control where appropriate and cost effective
- 8) Addressing the desired future condition (DFC) of groundwater resources (as adopted by the District under TWC § 36.108)

This Plan is intended as a guide or blueprint for action of those individuals charged with the responsibility for the execution of District activities.

3. Background

The GCGCD was first created in 1997 by Acts of the 75th Legislature, Chapter 1066 and was then amended in 1999 by House Bill 3817 which established the District boundary, limited to only a portion of Guadalupe County outside of the boundaries of the Edwards Aquifer Authority in Guadalupe County, Texas (Figure 1).

A confirmation election was held in November of 1999 confirming the District and elected seven initial directors from single member districts. The District has adopted rules and held public hearings in accordance with Texas Water Code §36.001 et. Seq.

HB 1947 (81st Legislature, 2009) repealed Section 6(g) of Section 9, Chapter 1066 (75th Legislature, 1997 Regular session) to change the election date of the Board of Directors from May to November of odd years.

According to the Texas Legislature, groundwater conservations districts (GCDs) “are the state’s preferred method of groundwater management”. GCGCD is part of Regional Water Planning Area L (Figure 3) and Groundwater Management Area 13 (Figure 4).

Authority

GCGCD has all of the rights, powers, privileges, authority, functions, and duties provided by the general law of Texas and is governed by Chapters 36 & 49 of the Texas Water Code. GCGCD does not have the authority to tax.

Fees/Revenue

The District receives income from fees imposed on production amounts of non-exempt permitted wells and associated application fees. The majority of fees received are collected from municipal-public water supply permit holders, followed by industrial, agricultural/irrigation and other beneficial uses as outlined in TWC § 36.001.

Groundwater Resources

The GCGCD overlies the Carrizo and Wilcox aquifers and the Leona Gravels within its boundaries (Figure 1). The Carrizo and Wilcox aquifers have sufficient capacity for municipal, commercial, and irrigation type production. The Carrizo and Wilcox aquifers are recharged in Guadalupe County from rainfall and streams flowing over the outcrop areas (Figure 2.) Both water-table and artesian conditions are found within the boundaries of the District. A substantial amount of recharge to the Carrizo and Wilcox aquifers located in Gonzales County originates in Guadalupe County.

For additional information regarding the aquifers in Guadalupe County, District’s website <https://gcgcd.org/about.html> and see TWDB Report 332 *Ground-Water Resources of the Carrizo-Wilcox Aquifer in the Central Texas Region*, September 1991, by Thorkildsen and Price. [Report 332 - Ground-Water Resources of the Carrizo-Wilcox Aquifer in the Central Texas Region](#)

4. Criteria for Plan Approval

A. Time Period of this Plan

This Plan will become effective, after notice and hearing, and upon adoption by the GCGCD Board of Directors, and approval as administratively complete by the Texas Water Development Board (TWDB). The Plan will remain in effect for five (5) years after the date of approval or until a revised Plan is adopted and certified.

B. Plan Adoption

Public notices demonstrating this Plan was adopted after the required public hearing and meeting of the Board of Directors are attached in Appendix A.

C. Board Resolution

A certified copy of the resolution of the Board of Directors of the District adopting this Management Plan is attached in Appendix B.

D. Coordination with Surface Water Management Entities

Letter transmitting a copy of this Management Plan to the Guadalupe-Blanco River Authority (GBRA) is attached in Appendix C.

5. Groundwater Management Plan Data 31 TAC 356.5(a)(5)(A-H) and TWC §36.1071(e)(4)

The Guadalupe County Groundwater Conservation District has considered the water supply needs and water management strategies included in the adopted 2022 State Water Plan. The District understands the water supply needs of the region and has received and reviewed the water management strategies data values supplied by the TWDB. The [2022 State Water Plan](#) addresses the population projections (4.1, pgs. 47-52) and the importance of utility-based planning (4.1.2, pgs. 52-62). GCGCD recognizes that public water supply in the region is the most efficient way to provide water to the increasing population of the area (6.2, pgs. 84-86). In developing this Management Plan, the District reviewed the Estimated Historical Groundwater Use and 2022 State Water Plan datasets (Appendix G) provided by TWDB and considered each of the following, which are incorporated into the Plan.

- **Modeled Available Groundwater (MAG)** 31 TAC 356.5(a)(5)(A)

Texas Water Code §36.108 requires joint planning among the groundwater conservation districts within GMA 13. A key component of joint planning is to determine the “desired future conditions” (DFCs) that are used to calculate the “modeled available groundwater” (MAG). For an estimate of the modeled available groundwater in the district based on the desired future conditions – refer to GAM RUN 21-018 MAG [GAM Run 21-018 MAG \(texas.gov\)](#). Refer to the MAG report included in Appendix H. To view a summary table of MAGs by GCD in GMA 13 refer to Appendix I.

Modeled available groundwater is defined as “the amount of water that the executive administrator determines may be produced on an average annual basis to achieve a desired future condition established under Section 36.108”. TWC §36.001(25)

Desired future condition means “a quantitative description, adopted in accordance with Section 36.108, of the desired condition of the groundwater resources in a management area at one or more specified future times”. TWC §36.001(30).

Due to limitations of the Groundwater Availability Model for the Southern Portion of the Carrizo-Wilcox, Queen City, and Sparta aquifers identified and discussed during 2016 (Hutchison, 2017a) and 2021 Joint Planning, Groundwater Management Area 13 adopted two desired future conditions for the Carrizo-Wilcox, Queen City, and Sparta aquifers as described below.

- The first desired future condition for the Carrizo-Wilcox, Queen City and Sparta aquifers in Groundwater Management Area 13 is that 75 percent of the saturated thickness in the outcrop at the end of 2012 remains at the end of 2080.
- In addition, a secondary desired future condition for the Carrizo-Wilcox, Queen City, and Sparta aquifers in Groundwater Management Area 13 is an average drawdown of 49 feet (+/- 5 feet) for all of GMA 13. The drawdown is calculated from the end of 2012 conditions to the year 2080. (See Appendix J)

**April 15, 2022, TWBD determined the desired future conditions explanatory report and other materials for Groundwater Management Area 13 required by TWC §36.108(d-3) are administratively complete in accordance with 31 TAC §356.33. See Appendix D.*

- **Estimated Historical Groundwater Use and 2022 State Water Plan Datasets**

31 TAC §356.52(a)(5)(B); §356.10(2) and TWC §36.1071(e)(3)(B)

The TWDB Estimated Historical Water Use Survey (WUS) and 2022 State Water Plan Datasets for Guadalupe County charts by year and source the primary uses of both groundwater and surface water. The estimated historical groundwater use is for years 2004-2019. In 2019, the primary use of groundwater for Guadalupe County was municipal (8,137 AF), followed by steam electric (1,680 AF), irrigation (422 AF), livestock (321 AF), manufacturing (105 AF), and mining (1 AF).

See Appendix G, page 3.

See Appendix E for definitions.

- **Projected Surface Water Supplies - 31 TAC §356.52(a)(5)(F) and TWC §36.1071(e)(3)(F)**

According to the TWDB Estimated Historical Water Use Survey and 2022 State Water Plan Datasets, Guadalupe County’s projected surface water supplies for the Guadalupe and San Antonio Water Use Group (WUG) Basins are sourced primarily

from Canyon Lake Reservoir and the Guadalupe River Run-of-the River. See Appendix G, page 4.

- **Projected Total Demand for Water** – 31 TAC §356.52(a)(5)(G) and TWC §36.1071(e)(3)(G)

According to the TWDB Estimated Historical Water Use Survey and 2022 State Water Plan Datasets, total projected water demands for Guadalupe County increase from 34,496 AF in year 2020 to 60,886 AF by year 2070. See Appendix G, page 6 for list of projected water demands by WUG and WUG Basin from 2020-2070.

- **Water Supply Needs** – TWC §36.1071(e)(4)

According to the TWDB Estimated Historical Water Use Survey and 2022 State Water Plan Datasets, projected water supply needs for Guadalupe County indicate a need of 14,765 AF to meet demand needs of year 2070 (See Appendix G, page 7). These projected water demands in excess of existing water supplies are primarily for municipal water use within the District. The majority of permits held within GCGCD are municipal/public water supply. Projected needs listed in the TWDB estimated historical water use/2022 state water plan data packet (Appendix G) are primarily municipal. Municipal needs in Guadalupe County exist for the following water use groups (WUGs): Cibolo, Crystal Clear WSC, Green Valley SUD, Luling, Marion, Martindale WSC, New Braunfels, Schertz, Seguin, Selma, and Water Services. Additional needs exist in one other WUG: Manufacturing. From 2020-2070, the total needs in Guadalupe County are projected to increase from 43 AF to 14,765 AF.

- **Water Management Strategies - From the 2022 Texas State Water Plan (SWP)**
TWC §36.1071(e)(4)

TWDB Estimated Historical Water Use Survey and 2022 State Water Plan Datasets lists the water management strategies by WUG and aquifer from 2020-2070 for Guadalupe County. Specific projects or actions to increase water supply or maximize existing supply to meet the needs of the growing population are identified. In Seguin, the SSLGC Expanded Carrizo Project is estimated to be the largest strategy at 3,000 AF (2020-2070). See Appendix G, pages 8-11 for a full list.

Projected water management strategies listed in the TWDB estimated historical water use/2022 state water plan data packet and located within Guadalupe County are: Municipal Water Conservation (Cibolo, County - Other, Crystal Clear WSC, Gonzales County WSC, New Braunfels, Schertz, Seguin, Selma, and Water Services), Drought Management, (Crystal Clear WSC, Martindale, and Seguin), Carrizo-Wilcox Aquifer Wells (Canyon Regional Water Authority, and Schertz-Seguin Local Government Corporation). From 2020 to 2070, the total water management

strategies in Guadalupe County are projected to increase from 13,806 AF to 37,631 AF.

- **Groundwater Availability Model (GAM)**

31 TAC §356.52(a)(5)(C); TWC §36.1071(e)(3)(C); 31 TAC §356.52(a)(5)(D); TWC §36.1071(e)(3)(D); 31 TAC §356.52(a)(5)(E); TWC §36.1071(e)(3)(E)

The Groundwater Availability Model (GAM) is used to estimate the Modeled Available Groundwater (MAG) from the Desired Future Conditions (DFC). Estimates of the annual volume of recharge from precipitation, annual volume of water that discharges from the aquifer, annual volume of flow into the district within each aquifer, the annual volume of flow out of the aquifer within each aquifer, and the annual volume of flow between aquifers in the district is presented in the Groundwater Availability Model GAM Run 11-017 [GR11-017.PDF \(texas.gov\)](#) and is included in GAM report in Appendix K.

6. Actions, Procedures, Performance, and Avoidance Necessary to Effectuate the Management Plan, and Details on how the District will Manage Groundwater Supplies

TWC §36.1071(e)(2), 31 TAC §356.52(a)(4)

The District will implement the provisions of this Plan and will utilize the provisions of this Plan as a guidepost for on-going evaluation determining the direction or priority for activities of the District. Operations and activities of the District will be performed in a manner that best encourages cooperation with the appropriate state, regional or local water authority. All operations of the District, all agreements entered into by the District, and any additional planning efforts in which the District may participate will be consistent with the provisions of this Plan. The District encourages public cooperation and shall treat all citizens equally. All meetings are noticed and open to the public and conducted in accordance with the Texas Open Meetings Act.

The District will manage groundwater resources consistent with the intent and mission of the District to conserve, preserve, protect, and prevent waste of groundwater resources so that the economy of the areas within the District will be ensured growth for future generations.

The District has installed a network of six groundwater monitoring wells across the outcrop region to aid in identifying the impacts of production in the Carrizo Aquifer as it relates to the desired future conditions. Additionally, the District collected hydrogeologic data (aquifer thickness, transmissivity, permeability, specific yield, and water quality) from these wells located in the outcrop of the Carrizo Aquifer and shared this data with TWDB.

The District will monitor water levels in selected observation wells across the District at least three times a year and maintain a database of water levels for comparison. Water

level changes will be calculated and shared with the Board and the public at open meetings and via the District website www.gcgcd.org and reported to TWDB.

The District has adopted Rules relating to the permitting of wells and the production of groundwater as provided under the authority of Texas Water Code §36.101. These Rules may be amended to reflect changes in TWC §36 and to ensure the best management of the groundwater within the District.

The District Rules are used in the exercise of the powers conferred on the District by law and in the accomplishment of the purposes of the law creating the District. These Rules may be used as guides in the exercise of discretion, where discretion is vested. However, under no circumstances and in no particular case will they or any part therein, be construed as a limitation or restriction upon the District to exercise powers, duties and jurisdiction conferred by law. These Rules create no rights or privileges in any person or water well and shall not be construed to bind the Board in any manner in its promulgation of the District Management Plan, or amendments to these Rules.

Public cooperation is essential for this plan to accomplish its objectives. The District will work with the public and local and state agencies to achieve the goals set forth in this plan. The District will coordinate with public water suppliers, private groundwater users, and industrial and agricultural users to help them conserve groundwater. The District will work with other groundwater conservation districts within GMA 13 to best achieve the desired future conditions set forth by TWC §36.108.

The District has been a member of the Texas Alliance of Groundwater Districts (TAGD) since 2005 and participates in regular business meetings and attends annual summits to learn more about the 'best available science' and updated legislative matters potentially impacting groundwater and surface water in the state.

Current Rules (Effective August 12, 2021) are available on District website www.gcgcd.org.

7. Management Goals, Methodology for Tracking Progress, Management Objectives & Performance Standards

In Accordance with 31 TAC §356.52(a)(4), the General Manager of the District will prepare and present an annual report to the Board of Directors on the performance of the District with respect to achieving the District's management goals and objectives. The Annual Manager's Report will be delivered to the Board on or before March 31st of each new year. A copy of the Annual Manager's Report will be kept on file at the District and made available to the public after adoption by the board.

GOALS:

- 1) **Providing the Most Efficient Use of Groundwater:** 31 TAC 356.52(a)(1)(A); TWC §36.1071(a)(1)

Practices, techniques, and technologies that a district determines will provide the least consumption of groundwater for each type of use balanced with the benefits of using groundwater.

Management Goal:

The District's goal is to provide the most efficient use of groundwater.

Management Objectives:

- a. Each month, the District will compile a report of produced water as reported by municipal permit holders to be presented to the Board at each regularly scheduled board meeting and will be made available to the public on the District's website www.gcgcd.org at least quarterly.
- b. The District will provide educational tools to the public relating to the most efficient uses of groundwater via a regularly scheduled board meeting, District newsletter and/or its website at least once a calendar year.

Performance Standards:

- a. Maintain a database of produced water from public water supply permit holders within the District.
- b. Record the number of times and the method(s) used to provide the educational tools relating to the most efficient uses of groundwater each year.

- 2) **Controlling and Preventing Waste of Groundwater:** 31 TAC 356.52(a)(1)(B); TWC §36.1071(a)(2)

Management Goal:

The District's goal is to prevent waste of groundwater as defined in TWC §36.001(8) within its District's boundaries.

Management Objective:

The District will provide educational resources to the public on ways to control and prevent waste of groundwater at least once a calendar year by presentations at a regular scheduled board meeting, District newsletter and/or on its website.

Performance Standard:

Record the number of times and the method(s) used to provide the educational resources relating to controlling and preventing waste of groundwater each year.

- 3) **Controlling and Preventing Subsidence:** 31 TAC 356.52(a)(1)(C); TWC §36.1071(a)(3)

Guadalupe County Groundwater Conservation District has reviewed TWDB subsidence risk report, [*Identification of the Vulnerability of the Major and Minor Aquifers of Texas to Subsidence with Regard to Groundwater Pumping*](#) – TWDB

Contract Number 1648302062, by LRE Water and agrees that the southern portion of the Carrizo-Wilcox has a lower risk factor [Figure 4.7] and therefore; goals, objectives, and performance standards are not applicable. GCGCD will investigate any reports of potential subsidence.

4) Addressing Conjunctive Surface Water Management: 31 TAC 356.52(a)(1)(D); TWC §36.1071(a)(4)

Management Goal:

The District's goal is to address the conjunctive use potential of groundwater and surface water sources for the benefit of the residents of the District.

Management Objectives:

- a. The District will connect with staff of the Guadalupe-Blanco River Authority (GBRA) at least once a year to share information updates about conjunctive use potential.
- b. The District will attend at least one Regional Water Planning Group (RWPG) meeting annually to share the information updates about potential conjunctive uses with its Board of Directors.
- c. The District will publish in the District's newsletter updates from the RWPG at least once a year.

Performance Standards:

- a. The District will record the date, number of meetings, and summary of discussion topic(s) between GCGCD and GBRA staff each year.
- b. The District will record the date(s) and number of RWPGs meeting(s) attended by GCGCD each year.
- c. The District will record the Newsletter edition featuring the RWPG update in the District's Annual Manager's Report.

5) Addressing Natural Resource Issues: 31 TAC 356.52(a)(1)(E); TWC §36.1071(a)(5)

Natural Resource Issues are issues related to environmental and other concerns that may be affected by a district's groundwater management plan and rules, such as impacts on endangered species, soils, oil and gas production, mining, air and water quality degradation, agriculture, and plant and animal life.

Management Goal:

District's goal is to protect the natural resources of the GCGCD.

Management Objectives:

- a. The District will connect with the Natural Resources Conservation Service (NRCS) representatives at least once a year to exchange information

regarding groundwater availability, irrigation demands, and NRCS programs relating to groundwater.

- b. The District will connect with representatives of the Texas Railroad Commission (RRC) at least once a year to discuss abandoned oil/gas wells and plugging of such wells within the GCGCD boundary.

Performance Standards:

- a. The District will record the date(s) of the meeting(s) and a summary of the discussion each year.
- b. The District will record the date(s) of the meeting(s) and a summary of the discussion each year.

6) Addressing Drought Conditions: 31 TAC 356.52(a)(1)(F); TWC §36.1071(a)(6)

Management Goal:

The District's goal is to keep the public well informed of the drought conditions across the region. Links to TWDB drought page and GCGCD drought page can be found at: <https://www.waterdatafortexas.org/drought> and on the District's website <http://gcgcd.org/drought.html>

The District is a partner of the TWDB TexMesoNet program [TexMesoNet | Texas Water Development Board](#) with seven stations a part of the GCGCD network.

Management Objectives:

- a. The District will collect data from the TexMesoNet sites within the District each month and present monthly rainfall totals to the Board and public at a regularly scheduled meeting.
- b. The District will review the drought maps provided by TWDB at each regularly scheduled board meeting.
- c. The District's manager will at least once a year review/discuss the District's Drought Management Plan.

Performance Standards:

- a. The District will maintain a database of annual rainfall totals.
- b. The Board will review the drought maps at regular monthly board meetings.
- c. Record the date of the review of the Drought Management Plan.

7) Addressing, where appropriate and cost effective: 31 TAC 356.52(a)(1)(G); TWC §36.1071(a)(7)

a) Conservation

Management Objective:

The District, via its website and/or Newsletter, will provide educational resources on a variety of water conservation tools to the public at least once a year.

Performance Standard:

Record the topic, method of dissemination and number of times each year.

- b) **Recharge Enhancement** – Increased recharge accomplished by the modification of the land surface, streams, or lakes to increase seepage or infiltration rates or by the direct injection of water into the subsurface through wells.

Management Objective:

The District, via its website and/or Newsletter, or a regular scheduled board meeting will provide to the public at least once a year, updated information on the subject of recharge enhancement.

Performance Standard:

Record the topic, method of dissemination and number of times each year.

- c) **Rainwater Harvesting**

Management Objective:

The District, via its website and/or Newsletter, or a regular scheduled board meeting will provide to the public at least once a year, updated information on the subject of rainwater harvesting.

Performance Standard:

Record the topic, method of dissemination and number of times each year.

- d) **Precipitation Enhancement**

Precipitation enhancement projects are not a cost-effective tool for GCGCD and therefore not applicable as a management goal.

- e) **Brush Control**

Brush control projects are not a cost-effective tool for GCGCD and therefore not applicable as a management goal.

- 8) **Addressing the Desired Future Conditions** established under TWC §36.108 31TAC 356.52(a)(1)(H); TWC §36.1071(a)(8)

Management Goal:

The District's goal is to manage its aquifers within the established desired future conditions by participating in joint planning efforts and by obtaining water level measurements from the network of monitoring wells established throughout the

District in an effort to measure the health of the aquifers and assess the District's progress in achieving its desired future conditions.

Management Objectives:

- a. The District's designated representative will attend at least one GMA 13 meeting a year to obtain updates, share information with the other Districts, and participate in the DFC planning process.
- b. The District will obtain water level measurements in both the Carrizo and Wilcox aquifers three times a year and compile the data into a report posted on the District's website and/or Newsletter at least annually.
- c. At the end of each DFC cycle, the District will compile the water level measurements obtained from the District's monitoring well network for that same five-year cycle into a summary report and calculate the water level averages over the five-year period to track the District's progress in achieving its desired future conditions.

Performance Standards:

- a. Record the date of meeting(s) attended and update the Board at regular board meetings.
- b. Record the date of the water level measurements and maintain a database of the water level measurements recorded.
- c. Calculate the District's monitoring well water level averages annually and include in the District's annual Manager's Report for each DFC cycle.

