

## 24-Hour Dissolved Oxygen

### Sampling for Compliance with Standards for the Aquatic-Life Use Parameter Codes 89857 and 89855

Each classified water body in the TSWQS is assigned an aquatic-life use (ALU)—*exceptional, high, intermediate, limited, or minimal*—based on physical, chemical, and biological characteristics. To protect these uses, 24-hour average DO criteria and absolute DO minimum criteria are assigned to each ALU category.

For detailed information on DO criteria for classified and unclassified water bodies and on the use of 24-hour DO data in assessing aquatic-life-use support, see the most recent revision of the TCEQ's *Guidance for Assessing and Reporting Surface Water Quality in Texas* (see Appendix A).

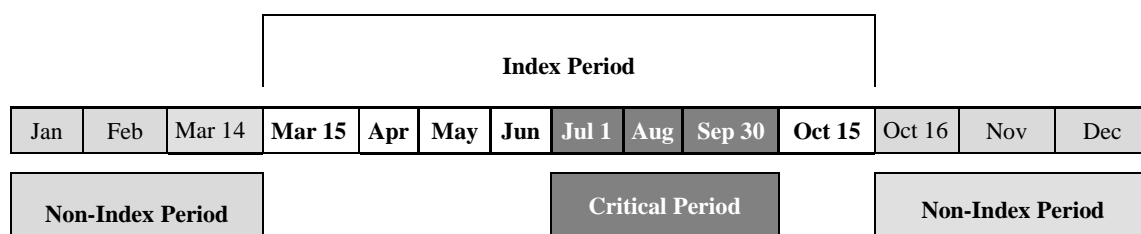
### Unattended Data Collection—Dissolved Oxygen

#### Why Collect 24-Hour Data?

Dissolved oxygen sampling for compliance with ALU standards is targeted to water bodies where low instantaneous DO levels indicate only partial support or nonsupport of designated ALUs. This sampling requires intensive monitoring with automated equipment that is preset to record and store field measurements over one 24-hour period.

#### When to Take Measurements

Twenty-four-hour DO monitoring events can be conducted year-round. The *index period* (March 15-October 15) represents the warm weather seasons of the year. The *critical period* of the year occurs July 1-September 15 when minimum streamflows, maximum temperatures, and minimum DO concentrations typically occur in Texas streams. See Figure 3.1



**Figure 3.1.** Index, non-index, and critical periods.

To ensure unbiased, seasonally representative data, samples are allocated to various times of the year over a period of at least two years according to the following temporal distribution:

- 20% of the total number of 24-Hour DO samples collected during the critical portion of the index period (July 1 - September 30);
- 33.3 - 40% of the total number of 24-Hour DO samples collected during the non-critical portion of the index period (March 15 – June 30, and October 1- October 15);

- 33.3 - 50% of the total number of 24-Hour monitoring events in the non-index period (October 16 - March 14).

This results in approximately 50 – 66.7% of the total number of 24-hour monitoring events collected over at least two years during the index period (March 15 – October 15), and 33.3 – 50% of 24-hour monitoring events in the non-index period (October 16 – March 14).

**Approximately one month must separate each 24-hour sampling event. The minimum number of samples collected in a year is two—one within the index period and one within the critical period.**

See Table 3.1 for an example of the temporal distribution of ten 24-hour dissolved oxygen (DO) monitoring events collected over a two year period. Data collectors can adjust the months in which samples are collected, as long as there is at least a month between sample events, and the proportions of sample events in each period remain consistent with guidance.

**Note:** For specific guidance on data requirements for determining DO standards compliance refer to the most current version of the *Guidance for Assessing and Reporting Surface Water Quality in Texas* (see Appendix A).

**Table 3.1.** Example distribution of 24-hour DO monitoring events collected over two years.

| Date               | Year       | Index Period         |                  | Non-Index Period |
|--------------------|------------|----------------------|------------------|------------------|
|                    |            | Non-Critical Portion | Critical Portion |                  |
| January            | 1          |                      |                  |                  |
| February           | 1          |                      |                  | ✓                |
| March 15th - 31st  | 1          |                      |                  |                  |
| April              | 1          | ✓                    |                  |                  |
| May                | 1          |                      |                  |                  |
| June               | 1          | ✓                    |                  |                  |
| July               | 1          |                      |                  |                  |
| August             | 1          |                      | ✓                |                  |
| September          | 1          |                      |                  |                  |
| October 1st - 15th | 1          |                      |                  |                  |
| November           | 1          |                      |                  | ✓                |
| December           | 1          |                      |                  |                  |
| January            | 2          |                      |                  |                  |
| February           | 2          |                      |                  | ✓                |
| March 15th - 31st  | 2          | ✓                    |                  |                  |
| April              | 2          |                      |                  |                  |
| May                | 2          |                      |                  |                  |
| June               | 2          |                      |                  |                  |
| July               | 2          |                      | ✓                |                  |
| August             | 2          |                      |                  |                  |
| September          | 2          |                      |                  |                  |
| October 1st - 15th | 2          | ✓                    |                  |                  |
| November           | 2          |                      |                  |                  |
| December           | 2          |                      |                  | ✓                |
|                    | total      | 4                    | 2                | 4                |
|                    | % of total | 40%                  | 20%              | 40%              |