8.11.01 GEOGRAPHIC INFORMATION SYSTEMS POSITIONAL DATA: Policy

PURPOSE

To establish the policy and procedures for the Texas Commission on Environmental Quality (TCEQ) relating to the collection, management, and use of positional data (geographic coordinates and elevation) for all entities, including, but not limited to, facilities, assessment sites, and incident sites, under its jurisdiction.

To inform management, supervisory personnel, and employees of the need to establish accurate and consistent procedures for data collection across all Program Areas and the benefit of an agency-wide approach to the use of Geographical Information Systems.

To provide the mechanism for developing necessary procedures to ensure agency-wide standards and accuracy for acquisition of positional data.

To provide the guidelines for the acquisition, implementation, and/or training in new technologies that will achieve the level of accuracy required by this Policy.

To assist in the compliance with U.S. Environmental Protection Agency standards for positional data accuracy and enhance the capability of the Commission to identify potential pollution sources.

To contribute pertinent and reliable information for watershed management and protection initiatives and enhance the validity and precision of Commission models for water and air quality.

Provide a more cost effective approach in development of positional data as well as guarantee the credibility of TCEQ positional data.

POLICY

The TCEQ will maintain consistency and accuracy in positional data and support internal and state-wide Geographic Information System standardization efforts.

A GIS Steering Committee, made up of staff representing each Program Area using GIS, will coordinate the implementation of additional positional data procedures, as well as recommend to the IT Steering Committee modifications and/or additions to the Policy. This committee will guide and direct all efforts related to the establishment and implementation of an agency-wide Positional Data Policy. Some specific issues that should be addressed by the Committee to support this Policy are:

- The Establishment and Use of Unique Identification Numbers
- Shared Responsibilities Among Divisions and Program Areas
- Minimum Data Elements
- Memorandum of Understanding and Sign-off
- Training
- Data Acquisition Using:
  - U.S. Geological Survey Topographic Maps
  - Global Positioning Systems
  - Digital Orthophotography

- Verification and Maintenance of Data
- Procedures for Reporting Positional Data by Outside Parties
- Periodic Review and Evaluation of the Policy and Procedures

DEFINITIONS

Assessment Site - An entity, such as a sampling location or an observation well, established for the purpose of evaluating ambient environmental conditions.

Attribute - A characteristic of an entity, such as depth, wind velocity, sample collection time, or permit number.

Datum - A framework or reference system used to obtain the spherical coordinates of a point on the earth's surface. Separate datums exist for horizontal and vertical reference.

Differential Positioning - The precise measurement of the relative positions of two receivers tracking the same GPS satellite signals. Typically this involves a base station at a site located by conventional surveying and a mobile station. Precise measurement is accomplished with computer software that corrects for errors resulting from satellite positions, inaccuracies in radio transmissions, and atmospheric conditions.

Entity - A phenomenon in the real world that has spatial characteristics and is of a defined type. TCEQ requires information on three types of entities; facilities, assessment sites, and incident sites.

Facility - An entity that is deliberately established as a site for designated activities, such as waste disposal, manufacturing, or habitation. Many facilities of interest to TCEQ have one or more regulated activities. These activities occur at units, such as wells, septic tanks, smoke stacks, or water intakes associated with the facility.

Global Positioning System - A satellite-based tool for establishing the location of a point on the earth's surface. Abbreviated as "GPS", this term generally refers to a constellation of earth-orbiting, Department of Defense satellites and associated ground equipment.

Incident Site - An entity, such as a hazardous chemical spill, a fish kill, or burning train wreck, that involves a short-term release of one or more substances of concern to TCEQ.

Positional Accuracy - The closeness of results of observations to the true values or the values accepted as being true for the three-dimensional location of an entity.

Unit - A point or object of interest within a facility, assessment site, or incident site. Examples of units include: an emission point, injection well, raw water intake, point of discharge, and public water supply well.

AUTHORITY

TCEQ Commissioners

EFFECTIVE DATE

July 27, 1994

CHAPTER 8 INFORMATION RESOURCES
Texas Commission on Environmental Quality

REVISED DATE(S)

March 20, 2000
November 4, 2002

8.11.02 GEOGRAPHIC INFORMATION SYSTEMS POSITIONAL DATA: Guidelines and Information

UNIQUE IDENTIFICATION OF GEOGRAPHIC LOCATIONS

Geographic Identification Number. Each geographic location of interest to the TCEQ shall be assigned a unique geographic identification number. This identification number will be used agency-wide. Once assigned, a geographic identification number will not be repeated.

Entities Regulated By More Than One Program Area. The geographic identification number shall be tracked in the Agency's computer system in such a manner that it allows direct access to all regulatory information pertaining to the location, across all Program Areas.

Use by Other Organizations. The TCEQ will encourage the use of TCEQ Geographic Identification Numbers by other governmental and private organizations.

HORIZONTAL POSITIONAL DATA

Coordinates. All horizontal positions will be measured and recorded in latitude and longitude coordinates. The format shall be in either *decimal degrees* carried out to at least 4 decimal places or in *degrees, minutes, and seconds* with the seconds carried out to at least 1 decimal place. All longitudes in the Western Hemisphere shall be prefixed with a negative sign. *Note: All latitude and longitude fields in the database must contain a valid coordinate. Zero values are not acceptable for they cannot be projected.*

Datum. The standard North American Datum of 1983 (NAD83) shall be used for all latitude and longitude measurements. *(Note that NAD83 is identical to the WGS84 datum within the conterminous United States.)*

Accuracy. All horizontal positions collected using certified GPS units or by interpretation from 1-meter DOQQs shall maintain a minimum level of accuracy of at least 25 meters across all program areas. Use of GPS equipment is *strongly encouraged* in the acquisition of coordinates for all locations tracked by the TCEQ. A Program Area may establish a minimum accuracy level of less than 25 meters as needed. The GIS Steering Committee will coordinate all cross-programmatic needs for minimum accuracy levels of less than 25 meters.

VERTICAL POSITIONAL DATA

Coordinates. In cases requiring measurement of elevation, units of meters shall be used. The number of decimal places recorded shall be appropriate to the resolution of the measurement method.

Datum. The North American Vertical Datum of 1988 (NAVD88) shall be used for vertical measurements.

Accuracy. To be determined by each Program Area. The GIS Steering Committee will coordinate all cross-programmatic needs for minimum accuracy levels.

POSITIONAL MEASUREMENT TECHNIQUES

Certification. Any equipment and/or technique to be employed by TCEQ for positional measurement shall first be certified to be capable of meeting the Agency's positional data policy. Certification will be based upon criteria established by the GIS Steering Committee.

Training. Any member of the TCEQ staff who collects positional data shall pass a training program approved by the GIS Steering Committee to ensure that he or she has the knowledge and skills required to collect positional data that meets agency standards.

POSITIONAL MEASUREMENT DOCUMENTATION

Minimum Data Elements. For each positional measurement, a minimum set of data will be recorded. Refer to the "Attribute Standards" section below.

Associated Identification Numbers. To facilitate insertion of a new geographic identification number into the appropriate TCEQ databases, any TCEQ related facilities and/or assessment sites at that location shall be documented by their identification numbers. These include active, inactive and historic operations.

ACCESS TO POSITIONAL DATA

Common Database. All positional data shall be recorded in a common position measurement database that is accessible across the agency.

Geographic Information System. Geographic position measurements shall be used to build and update features in the TCEQ GIS. Each TCEQ-specific feature in the GIS shall include, as one of its attributes, the geographic identification number to allow cross-reference to the detailed information in the positional measurement database.

ATTRIBUTE STANDARDS

All attributes for positional data must conform to the standards specified in the document entitled **"Attribute Standards for TCEQ Geographic Locational Data",** accessed through the *GIS Policy* page on the GIS Internal Web Site. The direct URL is:

http://home.tnrcc.state.tx.us/internal/gis/pub/papers/datadict.html