Exhibit D

Guidelines for Regional Water Planning Data Deliverables (2007-2012)

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Water Resource Planning and Information

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Introduction

The Texas Legislature directed the Texas Water Development Board (TWDB) to establish standards for reports and data presented in regional water plans. Section 16.053(d) of the Texas Water Code states: "The board shall provide guidelines for the format in which information shall be presented in the Regional Water Plans." This document, along with 31 Texas Administrative Code (TAC) §357.7 and 357.10, provides data reporting and formatting specifications for planning groups to follow when calculating and submitting electronic data into the Regional Water Planning Data Web Interface, and serves as an addendum to the "*General Guidelines for Regional Water Plan Development"* available at: http://www.twdb.state.tx.us/rwpg/planning_page.asp

The remainder of this document provides more detailed guidance as to how each planning group should calculate and report data in the TWDB's Regional Water Planning Data Web Interface available at http://www.twdb.state.tx.us. Section 1 discusses general data requirements and expectations; Section 2 details the general format for reporting electronic data, including file and software types; Section 3 discusses required data for the Sources module; Section 4 outlines required data for the Water User Group module; Section 5 discusses required data for the Wholesale Water Providers module; and Section 6 outlines required data for the Water Management Strategies module.

1.0 General Data Requirements

Data should conform and comply with all 31 TAC Chapter 357 rules that require planning groups to evaluate the adequacy of water supplies in each region during drought of record conditions. Evaluations should consider surface water and groundwater data from the state water plan, existing water rights, contracts and option agreements, and any other relevant planning and water supply studies available. In addition:

1) submitted information must be accurate and based on the best data and science available;

2) potential interregional conflicts should be identified and resolved prior to final data entry;

3) planning groups must enter all fields in the database application unless otherwise stated;

4) any data fields, programming, and formatting within the database application must not be changed by planning groups or consultants;

5) spelling, word order, and proper names must be used consistently and correctly when entering data into the database application;

6) planning groups must use the same reporting conventions for data shared by more than one region; and

7) only whole numbers should be entered into the database application.

2.0 Formats for Electronic Data

2.1 Files and Software

Electronic files may be shipped using ZIP discs, JAZ discs, 3.5-inch disks, or CD (ISO 9600). Planning groups should deliver one copy of electronic files - on disc or CD - and a copy each of electronic file lists and file description print outs including metadata file printouts. Files and data transferred to the TWDB should be in a ready-to-use format. Formats of all computer files provided to the TWDB should be compatible with widely distributed versions of the following software:

- word processor files - Microsoft Word (MS Office 97 or newer versions);
- GIS coverages - Arc/Info (7.21 or newer);
- GIS shape files – ArcView (3.1 or newer);
- database files - Microsoft Access (MS Office 97or newer) for general database files (however, each region will have access to the TWDB's web-enabled database application via the internet and will not need to have any particular database software to use the internet application; additionally, a Microsoft Excel version of database tables behind the internet application will be available at the TWDB's website);
- internet browsers – Internet Explorer (5.5 or newer) or Netscape (6 or newer);
- spreadsheets files - Microsoft Excel (Office 97 or newer);
- graphs, bar-charts, pie-charts - Microsoft Excel (Office 97 or newer).

Planning groups should receive approval from the TWDB's executive administrator as to the compatibility of any alternative software.

Metadata and a printed file/disc description should accompany all electronic files. Planning groups need to provide an electronic plot file and an EOO coverage file for all GIS materials. File description documentation must explain file naming conventions and contents of each disc and file. File naming conventions should follow a recognizable pattern. Files submitted must be 100 percent compatible with Microsoft Excel. If using software other than Microsoft Excel, planning groups should receive prior approval from the TWDB as to its compatibility. All drawings and graphs included in reports should be provided to the TWDB in Encapsulated PostScript (EPS) formats with a TIFF preview using Pantone Process Colors (Pantone Matching System Colors – PMS colors) capable of being separated into four colors – cyan, yellow, magenta, and black.

2.2 Data Units

The following units of measurement apply to all submitted data presentations:

- land area - square miles (mi ^{2}),
- water area – acres (ac),
- water volume – acre-feet (ac-ft),
- water supply and demand– acre-feet per year (ac-ft/yr),
- treatment plant capacities – million gallons per day (mgd),
- water use per capita - gallons per capita per day (gpcd),
- stream flows and reservoir releases – cubic feet per second (cfs),
- pumping rates – gallons per minute (gpm) or million gallons per day (mgd), and
- costs – constant September 2008 U.S. dollars (per Engineering News Record Construction Cost Index).

2.3 Maps

Planning groups should provide maps illustrating important features of each planning area including regional boundaries, political subdivisions, major water demand centers such as cities, major providers of municipal and manufacturing water, major water supplies, mapped aquifers, and any other important and relevant features of a planning area. Maps shown in regional water plans should also be submitted in electronic file form.

The TWDB will provide each planning group access to a set of standard base maps for preparing regional water plans. When available, planning groups should use TWDB StratMap products. If StratMap products are not available, and the TWDB has other acceptable coverages, the TWDB will make these base maps available. If the TWDB does not have StratMap or other products available, planning groups may use other types of coverages, but should coordinate with TWDB project managers to ensure compatibility. Access to TWDB digital map products will be provided through the regional water planning web page maintained by the TWDB. Planning groups may modify StratMap and/or TWDB source maps for their own purposes; however, planning groups must maintain the original color/line schemes and spatial integrity of these maps (e.g. projections, scales, etc). A master list of StratMap and TWDB source maps is available at the TWDB Web site on a regional basis at http://www.tnris.state.tx.us/datacatalog.aspx Planning groups should use the same source base maps, which are also available at the TWDB's website, and should strictly adhere to standardized map layers/coverage, and color template/schemes provided in original map sources.

Minimum map requirements include:

- to the extent possible figures should be designed so that black and white photocopies of originals are readable (if originals are in color, various colors should be discernable as shades of gray if the number of colors used and the requirements of clear presentation in color allow);

- a title, border, and a title box to include the planning group letter name, map name and number, and date prepared;

- if lengths or areas are accurate enough for one to measure directly from the map, scales should be clearly shown and labeled including scale bars;

- reference sources of both base maps and any substantial additions to base maps; and

- where possible, all maps should be developed from source base maps available from the TWDB.

2.4 Graphs

Various types of graphs may be used. Presentations of data using bar graphs, pie charts, and line graphs may be appropriate for various time and combinations of demand and supply categories

2.5 Data Time Frame and Time Steps

Data regarding population, water demands, water supplies etc. are reported in the state and regional water planning process in decadal increments starting with the base year 2010 and extending through 2060.

3.0 Data for Water Supply Sources

In addition to reporting existing water supplies volumes, planning groups must identify all water sources even if such sources are not connected and available for use as existing supplies. Data within the "*Sources*" module contains data fields for water sources in the planning region. Water sources can be either groundwater, surface water, or reuse. Sources should not be reported more than once. The Sources module includes volumes of water from water sources located in or available to each region under drought-of-record and current development conditions even if such sources are not connected and available for use. Include all water sources– with the exception of reservoirs and surface water components of water systems (see "*System*" field in section 3.1 for definition) - located physically within or outside of a region. For groundwater sources, report groundwater volumes as annual values under drought-of-record conditions for each aquifer at the appropriate county-basin level. Managed available groundwater numbers for approved desired conditions for Groundwater Management Areas will be populated in the database by the TWDB and will not be editable by the planning areas. The TWDB will provide a list of codes for all identified aquifers. Lakes and reservoirs can include the individual reservoir as a whole, or a system's surface water component (where reservoirs are operated in combination), or the non-system portion of a reservoir. List all lakes and reservoirs as reservoirs or systems, but do not list any as run-of-river diversions. Supply values for whole reservoirs as well as each region's or system's share of that supply must be reported. Report reservoirs and the surface water part of a system at the basin level.

Planning groups should not over-allocate existing water supply sources on a permanent basis, meaning that the sum of existing water supplies and water management strategy supplies assigned to water user groups cannot exceed the amount of water from a particular water supply in a county or river basin. For instance, if an existing water supply in a particular county or basin can provide 1,000 acre-feet per year , and 500 acre-feet per year has been apportioned to water user groups, then no more than the remaining 500 acre-feet per year can be used to meet other water needs.

3.1 Data Fields for Water Supply Sources

This section describes the existing fields in the Sources module of the Regional Water Planning Data Web Interface including those that planning groups must populate. Descriptions include possible entry codes or methods on how to develop required information.

- "*Source or System Name*" – This is the source or system's name. The TWDB will provide a list of sources and source IDs. Planning groups and the TWDB must identify any new sources not included in the list. The TWDB will add new sources to the list upon request by a region, as necessary. Source or system names will be utilized consistently on all forms throughout the database application.

- "*Source ID*" – Identification code for a water source. The TWDB will provide a list of sources and source IDs. The TWDB will add new sources and source IDs to the list upon request by the region, as necessary. Source IDs will be utilized consistently on all forms throughout the database application.

- "*Source Region*" – Identifying letter of region (A through P) where source is located.

  A = Panhandle Region
  B = Region B
  C = Region C
  D = North East Texas Region
  E = Far West Texas Region
  F = Region F
  G = Brazos Region
  H = Region H
  I = East Texas Region
  J = Plateau Region
  K = Lower Colorado Region
  L = South Central Texas Region
  M = Rio Grande Region
  N = Coastal Bend Region
  O = Llano Estacado Region
  P = Lavaca Region

- "*Source Type ID*" – Groundwater, surface water, or reuse identification code.

- 00 = surface water
- 01 = groundwater
- 02 = reuse

- "*System*"– Indicates if a source is from a system.

  - Y = source is from a system
  - N = source is not from a system

  When reservoirs that make up the surface water component of a system can be tracked to an end user, planning groups should report existing water supplies separately and any system gain should be shown as an additional entry. For systems composed of groundwater and surface water, planning groups should identify both components and track them separately. Existing water supplies from systems must be reported as annual values for each system component. If any system component is shared between different regions or is part of the total volume for an existing supply, total water volumes should be reported as well as each shared portion. Planning groups must describe how a system operates and must estimate the portion of existing supply for each system component, which may include a portion for the gain achieved via system operation. If more than one planning region uses components of water systems, then a system's existing supply figures must be consistent among sharing regions. For example, if Region X is using a reservoir located within Region Y, both Region X and Region Y should agree on the amount of water available from the reservoir in question. In addition, both regions should report the same water volumes in the same way along with each region's share of the water volume. If the amount of water available from a system's reservoirs cannot be tracked directly to end users, planning groups should list the total combined system yield including system gains if they exist. If a reservoir is part of a system also has a non-system portion, the system portion may be part of the combined system yield or listed as a separate entry. List the total non-system portion of the reservoir as well. For surface water components of a system, list the total supply of each reservoir if each reservoir can be identified directly with an end user, along with an additional entry for a system gain, if any exists.

- "*Source County Name*" County name where a source (or portion of one) is located. This field is required for all sources except lakes/reservoirs and surface water components of systems. The TWDB will provide a list of all county names.

- "*Source county ID*" – Three-digit county identification number assigned by the TWDB. The TWDB will provide a list of county IDs. Required for all sources except lakes/reservoirs and the surface water components of systems.

- "*Source Basin Name*" – Name of the river basin where a source (or portion) is located. The TWDB will provide a list of all river basins.

- "*Source Basin ID*" – Two-digit basin identification number assigned by the TWDB. The TWDB will provide a list of basin identification numbers.

- "*Water Right Permit Number*" – An editable field that lists the identifying code for TCEQ water rights permit numbers for sources with associated water rights. Coding must conform to the syntax: TBBWWWWW, where T is the type of water right, B is the two-digit basin code with leading zeros, and W is the five-digit water right permit number with leading zeros assigned by the TCEQ. All water rights associated with a source must be entered into this field.

- "*Total Availability* (2010-2060)" – An editable field that lists the value for total annual amounts of water available from sources for years 2010, 2020, 2030, 2040, 2050 and 2060. Managed available groundwater numbers for approved desired conditions for Groundwater Management Areas will be populated in the database by the TWDB and will not be editable by the planning areas. If a source is a lake or reservoir, the value will be the total firm yield or total operational supply. If the value entered is based on an operational procedure, it should not exceed the firm yield of the lake or reservoir under drought-of-record conditions, except when documented system operations yield system gains. When a source is shared among regions, list the mutually agreed upon total source supply. The basis for the supply value entered must be noted in the methodology field. The regional planning groups must have prior approval from the TWDB to list total availability numbers <u>not</u> based on firm yield. In addition, if total availability is not based on the firm yield of the source, the "*Is Total Availability Based on Firm Yield?*" and "*Firm Availability* (2010-2060)" fields must be completed.

- "*Is Total Availability Based on Firm Yield?*" – An editable field that details if the "*Total Availability* (2010-2060)" fields are based on firm yield. If the numbers entered into the "*Total Availability* (2010-2060)" fields are not based on firm yield, the firm yield of the source must be entered into the "*Firm Availability* (2010-2060)" field.

    - Y = total availability is based on firm yield
    - N = total availability is not based on firm yield

- "*Firm Availability* (2010-2060)" – This is an editable field that lists the value for the total <u>firm</u> annual amounts of water available from sources for years 2010, 2020, 2030, 2040, 2050 and 2060. If a source is a lake or reservoir, the value will be the total firm yield or total operational supply. If the value entered is based on an operational procedure, it should not exceed the firm yield of the lake or reservoir under drought-of-record conditions, except when documented system operations yield system gains. Managed available groundwater numbers for approved desired conditions for Groundwater Management Areas will be populated in the database by the TWDB and will not be editable by the planning areas.

- "*Total Availability Reduced due to Water Quality Considerations?*" – An editable field that indicates if water quality constraints were considered when developing total water availability estimates and total availability was reduced accordingly.

    - Y = total availability was reduced due to water quality considerations
    - N = total availability was not reduced due to water quality considerations

- "*Methodology*" – An editable field that is to be completed if total availability was reduced due to water quality considerations. The following should be included in this field: 1) methods employed, 2) the quantity of total availability reduced, and 3) describe water quality issues.

- "*Regional Comments*" – An editable field that is optional for additional comments about sources. If total supply values are from a system with a combined firm yield, the individual supply values for each reservoir comprising the combined system yields along with any system gains should be listed in this field. If the source is "*Other Aquifer*" the name of the aquifer should be listed in this field.

- "*Is Source Shared between Regions*?" – A computed field that indicates a source is shared by more than one region. If a source is shared by multiple regions, each region must request the TWDB to add its share to the source and should enter its portion of the source in the "*Share of Total Availability*" field.

    - Y = source is shared
    - N = source is not shared

- "*Share Region*" – Identifying letter of the regions (A through P) sharing the source.

- "*Share of Total Availability* (2010–2060)" – An editable field that lists the volume of the regional share of the total availability from a source for years 2010, 2020, 2030, 2040, 2050 and 2060.

- "*Regional Comments on Share of Total Availability*" – An editable field that is optional for additional comments about each region's share of the source.

4.0 Data for Water User Groups

4.1 General Information for Calculating and Reporting Data for Water User Groups

The Water User Groups module includes information for water user groups such as: 1) population and water demand projections, 2) existing water supply sources apportioned to water user groups, 3) water needs and water surpluses, and 4) descriptions of water management strategies.

4.2 Data Fields for Water User Groups

4.2.1 Descriptive Data for Water User Groups

The Water User Groups module includes descriptive data for water user groups over the 50-year planning horizon. Water user groups include:

- cities with population 500 or more;
- utilities providing more than 280 acre-feet per year of water for municipal use for counties having four or less of these utilities;
- Collective Reporting Units consisting of grouped utilities having common association;
- rural and unincorporated areas with municipal water use (referred to as "county-other" and aggregated on a county basis)
- manufacturing (aggregated on a county basis);
- steam electric power generation (aggregated on a county basis);
- mining (aggregated on a county basis);
- irrigation (aggregated on a county basis), and
- livestock (aggregated on a county basis).

Water user group are represented at county and basin unit levels, and if a water user group exists in one or more regions, counties, or basins, then that group will be reported in a divided fashion for each divided combination.

- "*WUG Name*"– Water user group name. The TWDB will provide a list of known names. Planning groups should contact the TWDB to add names not included in the list.

- "*WUG Detail*" – Lists additional descriptive information about the WUG. The planning group may request that the TWDB populate this field with provided information.

- "*WUG ID*" – Identification code for the water user group. The TWDB will provide a list of known water user group IDs.

- "*City ID*" – Four-digit identification codes for cities. The TWDB will provide a list of all known city IDs.

- "*Data Category*" – Three-character identifier provided by the TWDB, for different categories of water user groups:

    - MUN = municipal
    - MFG = manufacturing
    - PWR = steam electric power generation
    - MIN = mining
    - IRR = irrigation
    - STK = livestock

- "*WUG Region*" – Identifying letter for region (A through P) where the water user group (or portion) is located.

- "*WUG Split*?" - Indicates if water user group is divided by counties, river basins, or regional boundaries. The TWDB will provide this information for identified water user groups.

- Y = Water user group is split by county, basin, or regional boundary
- N = Water user group is not split by county, basin, or regional boundary

- "*Utility?*" – Indicates if a water user group is reported as an individual utility per TWDB Chapter 357 rules. Planning groups are required to report and analyze individual utilities that provide more than 280 acre-feet per year. Utilities may be reported individually if counties in which they reside have four or fewer utilities providing more than 280 acre-feet per year each. Utilities should not be reported within a Collective Reporting Unit if they are reported individually. Cities served by utilities must be reported as a city, not as a utility. If a portion of a city is served by a utility, that portion of the city's demand will remain with the city.

    - Y = water user group is an individual utility
    - N = water user group is not an individual utility

- "*CRU?*"– Indicates if water user groups are Collective Reporting Units. Planning groups are allowed, but not required, to group and assign utilities serving more than 280 acre-feet per year to a Collective Reporting Unit rather than report and analyze them individually. Utilities composing a Collective Reporting Unit must be located in counties having five or more utilities, each providing more than 280 acre-feet per year. Utilities within a Collective Reporting Unit must have a logical relationship, such as being served by common wholesale water providers, having common sources, or other appropriate associations.

    - Y = water user group is a Collective Reporting Unit
    - N = water user group is not a Collective Reporting Unit

- "*CRU Utilities*" – An editable field to be used to list utilities that comprise a Collective Reporting Unit if water user group is categorized as such.

- "*WUG County Name*" – Name of county in which the water user group (or portion) is located. The TWDB will provide a list of county names.

- "*WUG County ID*" – Three-digit county identification number. The TWDB will provide a reference table listing county identification numbers.

- "*WUG Basin Name*" – Name river basin in which water user group (or portion) is located. The TWDB provides a list of river basin names.

- "*WUG Basin ID*" – Two-digit basin identification number. The TWDB will provide a list of basin identification numbers.

- "*Regional Comments*" – An editable field that is optional to provide additional comments regarding a water user group's attributes, population values, daily values in gallons per capita per day (gpcd), water demand values, or other information related to the water user group section of the form.

- "*Population* (2010-2060)" – Water user group population values for 2010, 2020, 2030, 2040, 2050, and 2060. Population data is only entered for municipal water user groups. The TWDB will upload all population data after the regional review process for population and water demands is complete and the Board has approved population estimates.

- "*WUG GPCD* (2010-2060)" – Water user group gallons per capita per day values for 2010, 2020, 2030, 2040, 2050, and 2060, for water user groups with municipal demands. The TWDB will upload this data after the regional review process for population and water demands is complete and the Board has approved all estimates.

- "*Total Demand* (2010-2060) - Total county-basin water demand values for water user groups for 2010, 2020, 2030, 2040, 2050, and 2060. Total demand includes calculated plumbing code replacement savings amount per decade. The TWDB will upload this data after the regional review process for population and water demands is complete and the Board has approved all estimates.

- "*Plumbing Code Replacement Savings* (2010–2060)" – Estimated water use reduction due to normal plumbing fixture replacement for 2010, 2020, 2030, 2040, 2050, and 2060. The TWDB will upload this data after the regional review process for population and water demands is complete and the Board has approved all estimates.

- "*Net Demand* (2010-2060)" – Water user group water demand values for years 2010, 2020, 2030, 2040, 2050, and 2060. Net demand equals total demand minus plumbing code replacement values per decade for municipal data categories and is the demand value on which to base water needs for municipal water user groups. For other water use categories, net demand equals total demand. The database application will generate these values automatically.

4.2.2 Data for Existing Water Supplies for Water User Groups

In the following fields, planning groups should report water supply amounts from sources that currently exist, are connected, and accessible to water user groups, under drought-of-record conditions, and limited to the most restrictive factor (see field description for a list of restrictive factors). Planning groups will select from a list, a supply or supplies of water for each water user group. This list will be populated by the TWDB with sources of supply identified in the Sources module (described in Section 3.0 of this document). When reporting supplies for water user groups planning groups should also:

1) separate source supply values into county-basin units for all sources except lakes/reservoirs and surface water components of systems;

2) develop supply quantities at the basin level for reservoirs and surface water components of systems;

3) distribute source supply values to each water user group (or portion);

4) identify sources of current and future water use for water user groups (for example, if a user receives water from a provider who uses four sources, then there must be at least four records for that user; if it is known that a user does not receive water from all four sources, then list sources used);

5) not list source volumes more than once as a supply; therefore, if a portion of a supply accessible to a water user group is sold directly or indirectly to another water user group, the supply amounts allocated to each group should reflect this (for example, if water user group A owns a water right from a source for 1,000 acre-feet, and sells 500 acre-feet of this amount to water user group B, planning groups should divide the 1,000 acre-feet evenly between the two water user groups);

6) supplies based on contractual agreements should extend past the existing term of a contract if a contract is renewable;

7) water supply amounts reported by multiple users of a shared source must not exceed the total source availability; and

8) if a water user group lack reliable supply sources during a drought of record conditions, enter the source's information and show supplies as zero (every demand should have at least one corresponding source even if a supply is unreliable during drought of record).

When a supply is added to a water user group the following fields will be listed automatically by the database application (a description of these fields can be found in Section 3.0 of this document):

- "*Source or System Name*"
- "*Source ID*"
- "*Source Region*"
- "*Source Type ID*"
- "*System?*"
- "*Source County Name*"
- "*Source County ID*"
- "*Source Basin Name*"
- "*Source Basin ID*"

Additional fields to be completed by the planning group include:

- "*Water Right Permit Numbers*" – An editable field used to list the identifying code for water rights permit numbers for sources with water rights. Coding should conform to the following syntax: TBBWWWWW, where T is the type of water right, B is the two-digit basin cod, with leading zeros, and W is a five-digit permit number assigned by the Texas Commission on Environmental Quality. Planning groups should list all water rights associated with a source used by a water user groups.

- "*IBT*?"– An editable field that indicates if a source is an interbasin transfer (surface water only).

    - Y = Is an IBT
    - N = Is not an IBT

- "*Regional Comments*" – An editable field that is optional to list additional comments about a water user group's supply values, source attributes, or other information related to the "*Current Supplies"* form. If option "*J: Other*" is entered as a limiting factor in any decade the limiting factor must be listed in this field.

- "*Contract*?" – An editable field that indicates if a supply is under contract.

    - Y = supply is contracted
    - N = supply is not contracted

- "*Contract Expiration"* – If "*Y*" is selected for the "*Contract?*" field this field must be completed. This is an editable field that lists the date (mm/dd/yyyy) when a contract expires, assuming a supply is based on a contract, and the contract has an expiration date. Planning groups should include this date even if a contract is assumed to be renewable (supplies based on contractual agreements may extend past the existing term of the contract if contractual agreements include contract renewal or extension).

- "*Seller's Name*"– Name of seller providing water directly to the water user group.

- "*Seller's Alpha Number*" – TWDB Water Use Survey identification code for water purveyors selling supplies directly to water user groups. The TWDB will provide a list of alpha numbers, and if an alpha number is not listed, planning groups should contact TWDB staff for assignment of a number.

- "*WWP ID*" – Identification code for wholesale water providers who sell water directly to water user groups. Planning groups should contact the TWDB for wholesale water providers not included in the list.

- "*Supply Volume* (2010-2060)" – An editable field that lists the supply volume for the water user group for years 2010, 2020, 2030, 2040, 2050, and 2060. Specific volumes of water from a source should not be reported twice. Therefore, if a portion of a source connected to a water user group is sold to another water user group, either directly or indirectly, supply amounts apportioned to each water user group should reflect this. Distribute source supply values to each water user group, or portions of one as applicable. Supplies based on contractual agreements must extend past the existing term of a contract if contract holders expect renewals or extensions. Increases requiring new infrastructure should be attributed to recommended water management strategies.

- "*Limiting Factor (2010-2060)*"– Water supplies for water user groups should be limited to the most restrictive of the following criteria:

- **A**: Supplies or fractions of supplies available from reservoirs or surface water components of systems.
- **B**: Current well field capacities.
- **C**: Hydrogeologic properties of aquifers.
- **D**: Water quality.
- **E**: Current water rights, permits or other applicable regulatory restrictions.
- **F**: Current contracts and/or option agreements.
- **G**: Existing conveyance infrastructure.
- **H**: At a planning group's discretion, and if information is readily available, water treatment plant capacity (this is optional).
- **I**: Obligations that water user groups may have in terms of contracts or direct and indirect water sales to other water user groups.
- **J**: Other. If supply is limited by none of the above or a combination of the above, explicitly state the most restrictive limitation(s) in the "*Regional Comments*" field.

Please note that internal water distribution networks should not be considered a restrictive condition when determining amounts of available water.

4.2.3 Supply Summaries for Water User Groups

The "*Supply Summary*" section of the Water User Groups module identifies the total sum of supplies connected to water user groups.

- "*Supply Sum* (2010-2060)" – Sum of source water supply amounts connected to water user groups for the years 2010, 2020, 2030, 2040, 2050, and 2060. The database application will generate values automatically.

4.2.4 Water Needs and Surpluses for Water User Groups

The "*Needs and Surplus*" section of the Water User Group module identifies water needs and surpluses for water user groups by comparing the sum of existing water supplies with future water demands.

- "*Need and Surplus* (2010–2060)" – Equals supply summaries values per water user group minus net demand values per water user group for counties and river basins. Negative values indicate water shortages/needs. Positive values indicate water surpluses. Needs (negative values) require that each planning groups develop water management strategies to meet needs. The database application will generate these values automatically once supplies and demands are entered.

4.2.5 Water Management Strategies for Water User Groups

Planning groups will select from a list, a water management strategy or strategies to be used to meet the needs of the water user group. This list will be populated by the TWDB with

strategies identified in the Water Management Strategies module (described in Section 6.0 of this document).

When a water management strategy is added to a water user group the following fields will be listed automatically by the database application (a description of these fields can be found in Section 6.0 of this document):

- "*Sponsor Region*"
- "*WMS Unique Project ID*"
- "*WMS Project Name*"
- "*Source or System Name*"
- "*Source ID*"
- "*Source Type ID*"
- "*Source County Name*"
- "*Source County ID*"
- "*Source Basin Name*"
- "*Source Basin ID*"
- "*Water Quality Improvements*"
- "*WMS Online Date*"

Additional fields to be completed by the planning group include:

- "*Include WUG WMS Supply numbers in WMS Source Total Yield Rollup?*" – An editable field that details whether a WUG WMS Supply should be included in the WMS Source Total Yield calculation.

  - Y = include the WUG WMS Supply numbers in the WMS Source Total Yield rollup.
  - N = do not include the WUG WMS Supply numbers in the WMS Source Total Yield rollup.

- "*Total Strategy Supply Volume* (2010-2060)" – An editable field that lists total water supplies from each strategy that could feasibly be made available from current or potential water supply sources to each water user group with future needs. Current water rights, water contracts, and option agreements should be protected, although amendments to these may be recommended realizing that owner consent would be needed for implementation. Values are reported for the decade beginning with 2010. If a strategy redistributes or reallocates supplies, the entity providing the supply must be noted in the strategy's name. Reallocations and redistributions require original source and supplier information. If a portion of a water user group has a need, even if the group as a whole appears to have adequate water supplies, then planning groups should include a strategy for that portion of the water user group with a need. For example, if a water user group is split between two counties and data show that one part of the group has a need while the other part of the does not, then planning groups should identify a strategy that satisfies the part of the water user group with need.

- "*Recommendation Type*?"– An editable field that indicates if a planning group recommended a given strategy, recommended the strategy as an alternate, or evaluated, but did not recommend the strategy at all. If the strategy is recommended as an alternate, all data required for a recommended strategy must be completed.

  - S = strategy was evaluated and recommended
  - A = strategy was evaluated and recommended as an alternative
  - C = strategy was evaluated but not recommended

- *"Is Used to Meet Need*?" – A computed field that indicates whether a strategy meets water needs.

  - Y = strategy meets a need
  - N = strategy does meet a need

- "*IBT*?"– An editable field that indicates if a source is an interbasin transfer from a strategy's supply source basin of origin to a water user group basin of use (surface water only).

  - Y = is an interbasin transfer
  - N = is not an interbasin transfer

- "*Seller's Name*" – If a supply is sold directly to water user group lists the seller's name.

- "*Seller's Alpha Number*" – Identification code for seller of strategy's supply if supply is sold directly to a water user group. The TWDB assigns the codes and provides a list of alpha numbers. If an alpha number is not listed, please contact TWDB staff for assignment.

- "*WWP ID*" – Identification code for wholesale water provider supplying a strategy's water supply. Contact the TWDB to add new wholesale water providers to the list.

- "*Seller's WUG ID*" - Lists the "WUG ID" of a seller if a strategy's supply is from another water user group.

- "*Recursive WMS Supply*?"- An editable field that indicates if a strategy's supply redistributes water from another listed strategy. This is necessary to prevent double counting strategy supply volumes. For example, if strategy A1 conserves a certain volume of water and another strategy B1 allocates all or part of that conserved volume, this field would be marked "*Y*" for strategy B1.

- "*Recursive WMS Project ID*" - List "*WMS Unique Project ID*" from where a strategy's supply is derived. For example, if strategy A1 conserves a certain volume of water and another strategy B1 allocates all or part of that conserved volume, enter the "*WMS Project ID* "*A1*" here when listing strategy B1.

- "*Exception Code*" – Identifies why a strategy was not developed for a water user group with needs.

  - A = strategy was not feasible
  - B = a political subdivision providing water supply (other than water supply corporations, counties, or river authorities) chose not to participate in regional water planning efforts for needs located within its boundaries or extraterritorial jurisdiction

- "*Include WUG WMS Cost numbers in WMS Source Cost Rollup?*" – An editable field that details whether a WUG WMS Cost numbers should be included in the WMS Source cost calculations.

  - Y = include the WUG WMS cost numbers in the WMS Source cost rollup.
  - N = do not include the WUG WMS cost numbers in the WMS Source cost rollup.

- "*WMS Capital Costs*" **–** An editable field that specifies total capital costs needed to implement a given strategy. Note that total capital cost of implementing a strategy should equal the sum of all capital costs associated with a particular strategy's "*Unique Project ID*" (i.e. several water user groups or wholesale water providers may each have expected capital costs associated with a single strategy). **To further ensure that capital costs are not redundant, capital costs are to be entered into the database application only once for each water management strategy and should be associated only with the expected borrower(s) of these funds.** For example, capital costs for strategies funded by wholesale water providers should be associated with borrowing wholesalers only, not with any retail water users using the water even though they may be affected indirectly through water rates.

- "*Term of Debt Service*"– An editable field that specifies the estimated length or term of the debt service.

- "*WMS Annual Operating Costs* (2010-2060)" **–** Enter operating and maintenance costs based on water quantities supplied by a strategy as defined in the TWDB document "*General Guidelines for Regional Water Plan Development.*"

  - For year 2010, list the average annual total of operation and maintenance for the decade 2010-2019.
  - For year 2020, list the average annual total of operation and maintenance 2020-2029.
  - For year 2030, list the average annual total of operation and maintenance 2030-2039.
  - For year 2040, list the average annual total of operation and maintenance 2040-2049.
  - For year 2050, list the average annual total of operation and maintenance 2050-2059.
  - For year 2060, list the annual total of operation and maintenance for the year 2060.

- "*WMS Annual Cost per Acre-Foot* (2010-2060)" – The TWDB will calculate the average annual cost per acre-foot by dividing total average annual costs by the volume of water generated by a given strategy.

- "*WMS Discounted Annual Cost* (2010-2060)" – The TWDB will estimate discounted costs.

- "*Total WMS Cost per Acre-Foot*" – The TWDB will calculate total strategy costs over the entire planning period divided by the total acre-feet of a strategy's supply over the planning period.

- "*Total Discounted Present Value Cost*"– For each water user group, the total discounted present value of each strategy will be calculated as the sum of the discounted annual costs over the planning period. Discounted values will be automatically calculated by the database application and based on annual costs for each strategy.

- "*Total Discounted Present Value per Acre-Foot*" – The TWDB will calculate the total discounted present value of a strategy over the planning period divided by the total acre-feet of strategy supply over the planning period.

- "*Regional Comments*" – An editable field that is optional for additional comments from a planning group pertaining to a strategy's attributes, supplies or other information.

- **"***Sum of WMS Supplies for WUG***" –** A field that lists the total sum of supplies provided by all water management strategies for a given water user group. The database will generate values automatically. Compare these values to need values, if any exist, to ensure that water user group's needs are satisfied.

5.0 Data for Wholesale Water Providers

5.1 General Information for Calculating and Reporting Data for Wholesale Water Providers

The Wholesale Water Providers module reports data for wholesale water providers within each regional water planning area that meet the following definition:

> any person or entity, including river authorities and irrigation districts, that has contracts to sell more than 1000 acre-feet of water wholesale in any one year during the five years immediately preceding the adoption of the last regional water plan.

However, planning groups may include other persons and entities that are expected to meet the above definition during the period covered by the plan.

The form includes data fields regarding:

- all obligations, contracts or non-contracts of wholesale water providers through the 50-year planning horizon;

- water sources and existing water supply amounts in future decades assuming current infrastructure does not change through time;

- the amount of water existing water supplies that wholesale water providers and their customers can depend on and use during a drought of record;

- water supply needs or water surplus data for each recipient as well as the wholesale water provider as a whole; and

- water management strategies pertaining to recipients with needs;

Some fields within this form will not require input from planning groups, but will contain data automatically generated by database application. Additionally, some data represented on this form may be provided and pre-loaded by the TWDB.

There are key differences between the Wholesale Water Providers and Water User Groups modules and data. Specifically, water user groups are analyzed from a user's perspective, whereas wholesale water providers are analyzed from a provider's perspective. Also, analyses for water user groups are based on projections of one type of water use, whereas analyses for wholesale water providers are based primarily on existing water contracts. For example, a water user group's demand is based on only one of the six categories of water use (i.e., municipal, manufacturing, steam electric power, mining, irrigation, or livestock). Conversely, "demands" for wholesale water providers include contracts with recipients that they serve, and among the recipients of water from a wholesale water provider, all six categories of TWDB water use may be represented. Additionally, in analyses of water user group needs, demands are based on projected water demand. Conversely, wholesale water providers are analyzed by first identifying a provider's current contract obligations including how much water each contract provides. Then, other current non-contract obligations are incorporated. Demands for wholesale water providers, therefore, are based on current contract and non-contract commitments. This provides two separate but complementary scenarios.

Since data for wholesale water providers require tabulating contract information external to TWDB data sets, planning groups must develop contract and demand data for wholesale water providers. Wholesale water providers do not require population projections beyond those already provided by the TWDB for water user groups.

Demand obligations, either contract or non-contract, for entities supplied by wholesale water providers, whether located within or outside of a planning region, should be included when developing total demands assigned to wholesale water providers. Providers could conceivably supply water to entities located within neighboring regions. If two or more regions list a common provider, then planning groups should communicate with each other when developing provider demands to ensure accuracy.

5.2 Data Fields for Wholesale Water Providers

5.2.1 Descriptive Information for Wholesale Water Providers

The "*WWP*" section of the Wholesale Water Providers module identifies providers meeting specified criteria.

- **"***WWP Sponsor Region***"** – Identifying letter of region (A through P) of the regional water planning group "sponsoring" the wholesale water provider.

- "*WWP Name*" – Wholesale Water Provider name. The TWDB will provide a list of known names. Planning groups should contact the TWDB to add names not included in the list.

- "*WWP Alpha Number*" – Identification code for providers assigned by TWDB. The TWDB will provide a list of alpha numbers. If a TWDB alpha number is not listed, please contact TWDB staff for assignment.

- "*WWP ID*" – Unique identification code for providers assigned by the TWDB.

5.2.2 Customers of Wholesale Water Providers

The customers section of the Wholesale Water Providers module identifies provider customers, referred to as "recipients" on the form. In addition, this form identifies data categories for a recipient's type of water use, data regarding contract and non-contract water demand obligations, and general attributes of each recipient.

- "*Recipient Name*" – An editable field that lists the name of the recipient with which the wholesale water provider has contract or non-contract obligations.

- "*Recipient Alpha*" – TWDB identification code for recipients.

The planning group will be required to associate all wholesale water provider customers with a water user group. The TWDB will provide a list a water user groups. Once a water user group is selected, the following fields will be listed automatically by the database application (a description of these fields can be found in Section 4.0 of this document):

- "*WUG Name*"
- "*WUG ID*"
- "*City ID*"
- "*Data Category*"
- "*WUG County Name*"
- "*WUG County ID*"
- "*WUG Basin Name*"
- "*WUG Basin ID*"
- "*WUG Region*"

Additional editable fields include:

- "*Regional Comments*" – An editable field that is optional for providing additional comments from planning groups pertaining to recipient attributes, water user group attributes, wholesale water provider demand values, or other information related to the customers section of the form.

- "*Current Demand* (2010-2060)" – An editable field that lists wholesale water provider demand obligation values per recipient for years 2010, 2020, 2030, 2040, 2050, and 2060 for all data categories. If an obligation is based on a contract, list the contract amount.

- "*Contract or Non-Contract Demand*" – An editable field that indicates whether a demand obligation is contract or non-contract based.

    - C = demand is based on a contract
    - NC = demand is not based on a contract

- "*Contract Expiration*" – Date of contract expiration assuming demands are based on a contract and a contract has an expiration date. A contract expiration date should be included even if a contract is assumed to be renewable. This field is required if "*C*" is selected from the "*Contract or Non-Contract Demand*" field.

5.2.3 Wholesale Water Provider Obligations Summary

The "*WWP Obligations Summary*" section of the Wholesale Water Providers module identifies the total sum of obligations for each provider.

- *"Sum* (2010-2060)*"* – Sum of contract and non-contract obligation for wholesale water providers for years 2010, 2020, 2030, 2040, 2050, and 2060. Values are generated by the database application.

5.2.4 Existing Water Supplies for Wholesale Water Providers

The "*Current Supplies*" section of the Wholesale Water Providers module identifies water sources, source attributes, and existing supply values connected to each recipient from wholesale water provider sources. Planning groups will select from a list a supply or supplies of water for each wholesale water provider customer. This list will be populated with sources identified in the Sources module (described in Section 3.0 of this document). Supplies based on contractual agreements will extend past the existing term of the contract if a contract contemplates renewal or extension. Only provider sources and supplies connected to each recipient should be listed. Planning groups should separate source supply values into county and basin units for sources except lakes/reservoirs and surface water components of systems. For reservoirs and surface water components of systems, supply quantities should be developed at basin levels, and source supply values should be distributed to each recipient basin or portion of one as applicable.

When a supply is added to a wholesale water provider customer, the following fields will be listed automatically by the database application (a description of these fields can be found in Section 3.0 of this document):

- "*Source or System Name*"
- "*Source ID*"
- "*Source Region*"
- "*Source Type ID*"
- "*System?*"
- "*Source County Name*"
- "*Source County ID*"
- "*Source Basin Name*"
- "*Source Basin ID*"

Additional editable fields include:

- "*Water Right Permit Numbers*" – An editable field that lists the code for TCEQ water rights permit numbers for source supplies and associated water rights. Coding should conform to the syntax: TBBWWWWW, where T is the type of water right, B is a two-digit basin code with leading zeros, and W is the five-digit water right permit number with leading zeros. All water rights associated with a source of supply must be listed in this subsection.

- "*IBT*?" – An editable field that indicates if a source is an interbasin transfer from a supply source basin of origin to a wholesale water provider customer basin of use (surface water only).

    - Y = is an IBT
    - N = is not an IBT

- "Regional Comments" – An optional, editable field for providing additional comments pertaining to wholesale water provider recipient source supplies, source values, source attributes, or other information related to the current supplies section of the form.

- "*Supply Volume* (2010-2060)" – Supply amounts for years 2010, 2020, 2030, 2040, 2050, and 2060 from sources currently available through a wholesale water provider to recipients. If contracts are renewable, then supplies based on contractual agreements may extend past the existing term of a contract. Supply amounts should not increase in later years.

5.2.5 Supply Summary for Wholesale Water Providers

The "*Supply Summary*" section of the Wholesale Water Providers module identifies the total sum of supplies available to each wholesale water provider.

- *"Supply Sum* (2010-2060)*"* – Sum of source supply amounts available to each wholesale water provider. The database application will generate these values.

5.2.6 Recipient Needs and Surplus

The "*Recipient Needs and Surplus*" section of the Wholesale Water Providers module identifies water needs and/or surpluses for each recipient of water from a wholesale water provider.

- "*Recipient Needs and Surplus* (2010-2060) – Sum of total supplies per recipient minus total recipient demand obligations, contract or non-contract, for wholesale water providers. Negative values indicate water needs for recipients, while positive values indicate water surpluses. The database application will generate these values.

5.2.7 Wholesale Water Provider Needs and Surpluses

The "*Wholesale Water Provider Needs and Surpluses*" section of the Wholesale Water Providers module identifies water needs and surpluses for providers. For providers with unassigned surpluses (i.e. a provider has a surplus for which they do not have a recipient), enter recipients as "*unassigned*" along with county and/or basin names where surpluses exist if known. Also, sources corresponding to that surplus must be listed.

- "*WWP Needs and Surpluses* (2010-2060)" – Sum of total supplies per provider minus total demand obligations, contract and non-contract, for providers. Negative values indicate water needs, while positive values indicate water surpluses.

5.2.8 Water Management Strategies for Wholesale Water Providers

Planning groups should develop potentially feasible water management strategies when future water supply needs exist for individuals that receive water from wholesale providers. The "*Water Management Strategies*" section of the Wholesale Water Providers module provides a list of potentially feasible water management strategies and their costs for each wholesale water provider and their respective customers. The planning group will select from a list a water management strategy or strategies to meet the needs of the wholesale water provider and its customers. This list will be populated by the TWDB with water management strategies identified in the Water Management Strategies module (described in Section 6.0). Data for strategies listed should include amounts of water supply from current or potential water sources along with lists of recipients with future needs. If a recipient (or portion of one) shows a need, even if the wholesale water provider as a whole appears to have adequate supplies, include a water management strategy to address recipient's need.

When a water management strategy is added to a wholesale water provider customer, the following fields will be listed by the database application (refer to Section 6.0 for a description of these fields):

- "*Sponsor Region*"
- "*WMS Unique Project ID*"
- "*WMS Name*"
- "*Source Region*"
- "*Source Name*"
- "*Source County Name*"
- "*Source County ID*"
- "*Source Basin Name*"
- "*Source Basin ID*"
- "*Source ID*"
- "*Source Type*"

Additional editable fields include:

- "*Recommendation Type*?"– An editable field that indicates if a planning group recommended a given strategy, recommended the strategy as an alternate, or evaluated, but did not recommend the strategy at all.

  - S = strategy was evaluated and recommended
  - A = strategy was evaluated and recommended as an alternative
  - C = strategy was evaluated but not recommended

- *"Is Used to Meet Need*?" – A computed field that indicates whether a strategy meets water needs.

  - Y = strategy meets a need
  - N = strategy does meet a need

- "*Exception Code"* –Identifies why a strategy was not developed for a wholesale water provider recipient with needs.

  - A = the strategy was not feasible
  - B = a political subdivision providing water supply (other than water supply corporations, counties, or river authorities) chose not to participate in regional water planning efforts for needs located within its boundaries or extraterritorial jurisdiction

- "*IBT*?"– An editable field that indicates if a source is an interbasin transfer from a strategy's supply source basin of origin to a wholesale water provider customer basin of use (applies to surface water only).

  - Y = Is an interbasin transfer
  - N = Is not an interbasin transfer

- "*Regional Comments*" – An editable field for additional comments from a planning group pertaining to a strategy's attributes, supplies, or other information.

- "*Include WWP WMS Supply numbers in WMS Source Total Yield Rollup?*" – An editable field that details whether a WWP WMS Supply should be included in the WMS Source Total Yield calculation.

  - Y = include the WWP WMS Supply numbers in the WMS Source Total Yield rollup.
  - N = do not include the WWP WMS Supply numbers in the WMS Source Total Yield rollup.

- "*WMS Supply* (2010-2060)" – Shows total water supplies from each strategy that could feasibly be made available from current or potential water supply sources to wholesale water provider customers with future needs. Current water rights, water contracts, and option agreements should be protected, although amendments to these may be recommended realizing owner consent would be needed for implementation. Values are reported for each decade beginning with 2010. If a strategy redistributes or reallocates supplies, the entity providing the supply must be noted in the strategy's name. Reallocations and redistributions require original source and supplier information. If a wholesale water provider customer (or portion of one) has a need, even if the wholesale water provider as a whole appears to have adequate water supplies, then the planning groups should include a strategy for that wholesale water provider customer with a need.

- "*Include WWP WMS Cost numbers in WMS Source Cost Rollup?*" – An editable field that details whether a WWP WMS Cost numbers should be included in the WMS Source cost calculations.

  - Y = include the WWP WMS cost numbers in the WMS Source cost rollup.
  - N = do not include the WWP WMS cost numbers in the WMS Source cost rollup.

- "*WMS Capital Costs*" **–** An editable field that specifies total capital costs needed to implement a given strategy. Note that total capital cost of implementing a strategy should equal the sum of all capital costs associated with a particular strategy's "*Unique Project ID*" (i.e. several water user groups or wholesale water providers may each have expected capital costs associated with a single strategy). **To further ensure that capital costs are not redundant, capital costs are to be entered into the database application only once for each water management strategy and should be associated only with the expected borrower(s) of these funds.** For example, capital costs for strategies funded by wholesale water providers should be associated with borrowing wholesalers only, not with any retail water users using the water even though they may be affected indirectly through water rates.

- "*Term of Debt Service*"– An editable field that specifies the estimated length or term of the debt service.

- "*WMS Annual Operating Costs* (2010-2060)" **–** Enter operating and maintenance costs based on water quantities supplied by a strategy as defined in the TWDB document "*General Guidelines for Regional Water Plan Development.*"

- For year 2010, list the average annual total of operation and maintenance for the decade 2010-2019.
- For year 2020, list the average annual total of operation and maintenance 2020-2029.
- For year 2030, list the average annual total of operation and maintenance 2030-2039.
- For year 2040, list the average annual total of operation and maintenance 2040-2049.
- For year 2050, list the average annual total of operation and maintenance 2050-2059.
- For year 2060, list the annual total of operation and maintenance for the year 2060.

- "*WMS Annual Cost per Acre-Foot* (2010-2060)" – The TWDB will calculate the average annual cost per acre-foot by dividing total average annual costs by the volume of water generated by a given strategy.

- "*WMS Discounted Annual Cost* (2010-2060)" – The TWDB will estimate discounted costs by calculating the present value of each decade's costs. For 2010 through 2050, the discounting procedure assumes that average annual costs for each decade occur in each year of the decade and discounted to a base year from that year.

- "*Total WMS Cost per Acre-Foot*" – The TWDB will calculate total strategy costs over the entire planning period divided by the total acre-feet of a strategy's supply over the planning period.

- "*Total Discounted Present Value Cost*"– For each wholesale water provider, the total discounted present value of each strategy will be calculated as the sum of the discounted annual costs over the planning period. Discounted values will be automatically calculated on database forms and based on annual costs for each strategy.

- "*Total Discounted Present Value per Acre-Foot*" – The TWDB will calculate the total discounted present value of a strategy over the planning period divided by the total acre-feet of strategy supply over the planning period.

5.2.9 Recipient Supplies Summary for Water Management Strategies

- "*Sum of WMS Supplies for Recipient*" – Total sum of supplies available from all water management strategies for recipients. Values will be generated automatically by the database application. Compare these values to the need values, if any exist, to ensure that recipient needs are satisfied.

5.2.10 Wholesale Water Provider Summary for Water Management Strategies

- *"Sum of WMS Supplies for WWP"* – Total sum of supplies provided by water management strategies for wholesale water providers. Values will be generated

automatically by the database application. Compare these values to the need values, if any exist, to ensure that needs are satisfied.

6.0 Data for Water Management Strategies

6.1 General Information for Calculating and Reporting Data for Water Management Strategies

The Water Management Strategies module reports data for water management strategies evaluated by each regional water planning area to meet the needs of water user groups or wholesale water providers and their customers. This section includes information about the water management strategy; the sources included in the project and water user group and wholesale water provider water management strategy supply and cost information.

6.2 Data Fields for Water Management Strategies

6.2.1 Descriptive Information for Water Management Strategies

The "*WMS*" section of the Water Management Strategies module lists water management strategies evaluated by the regional water planning groups to meet the needs of water user groups or wholesale water providers and their customers.

- **"***WMS Sponsor Region***"** – Identifying letter of region (A through P) of the regional water planning group "sponsoring" the project.

- **"***WMS Unique Project ID***"** – Specifies unique identification numbers for water management strategies created and assigned by each planning group. Planning groups will designate each "*Unique Project ID*" with a region's letter (i.e., A through P) followed by a numerical tag. For example, water management strategy Project A1 is the first strategy listed for Region A that serves two water user groups with one new well field (water management strategies may serve multiple users). If a water management strategy supplies multiple water user groups, or is used by both a water user group and a wholesale water provider (or multiple water user groups and multiple wholesale water providers), the "*Unique Project ID*" must be consistent among all users of a strategy in question. Furthermore, if a strategy is multi-regional, all regions using it should cooperate to assign a "*Unique Project ID*," and regions using the strategy should list the same "*Unique Project ID*" when referring to the strategy. "*Unique Project IDs*" should be assigned to facilitate easy identification of distinct strategies as well as strategies used by more than one entity.

- "*WMS Name*" – Strategy name including pertinent information needed to concisely and accurately describe a strategy. If necessary, use the "*WMS Description*" field in this section of the form to add additional information. If a strategy is used by more than one water user groups or wholesale water provider, the strategy's name must be consistent for all entities using the strategy.

- "*WMS Description*" – An editable field to be utilized by the planning group or TWDB staff to provide additional descriptive information related to the water management strategy.

- *"WMS Type"* – letters specifying different types of water management strategies

  - A = aquifer storage and recovery
  - B = brush control
  - C = conservation
  - D = drought management
  - E = existing source or expanded use of an existing source
  - N = new source (for example new reservoir or new wells)
  - P = precipitation harvesting
  - R = reuse
  - W= weather modification

Planning groups are not restricted to using only the WMS types listed above, however, all unique strategies, should be listed separately and discussed in written reports.

- "*WMS Infrastructure*" – Indicates if a strategy includes pipelines or water treatment plants.

  - P = pipeline
  - W = water treatment plant
  - PW = pipeline and water treatment plant

- "*Additional RWPGs that will use this project*" – An editable field containing the identifying letter of all planning groups, including the "*WMS Sponsor Region*", using the water management strategy.

- "*Include in State Water Plan?*" – A computed field based on the "*Include in State Water Plan?*" field entered in the WMS Source section. If any water management strategy source is included in the State Water Plan, the project will be included in the State Water Plan.

- "*Calculate Total Yield of WMS based on Total Yield of Sources chosen for rollup?*"- If selected, the "*Total Yield of WMS*" field will be calculated by the application. The calculation will sum up the "*Total Yield of WMS Source*" field of any sources where the "*Include Source Total Yield numbers in WMS Project Rollup?*" field in the WMS Source section is set to "*Y*".

- "*Calculate Total Yield of WMS based on all Sources?*"- If selected, the "*Total Yield of WMS*" field will be calculated by the application. The calculation will sum up the "*Total Yield of WMS Source*" field for all WMS Sources related to the WMS Project.

- "*Total Yield of WMS* (2010 – 2060)" – If the "*Calculate Total Yield of WMS based on Total Yield of Sources chosen for rollup?*" or the "*Calculate Total Yield of WMS based*

on all Sources?" fields are not selected this is an editable field. It identifies the total yield of a water management strategy for 2010, 2020, 2030, 2040, 2050, and 2060. This field should include all potential yield from a water management strategy project, not just supplies allocated to water user groups and/or wholesale water providers. For example, if the water management strategy is to develop a new reservoir and only a portion of the firm yield has been allocated to water user groups and/or wholesale water providers and their customers, the firm yield of the new reservoir would be listed in this field. The number listed in this scenario would be greater than what was listed in the Water User Groups and/or Wholesale Water Providers modules. The number listed in this field will be used to calculate totals for the 2012 State Water Plan.

- "*Calculate Total Cost of WMS based on Total Cost of Sources chosen for rollup?*"- If selected, the "*Total WMS Capital Costs*" and the "*Total WMS Annual Operating Costs*" fields will be calculated by the application. The calculation will sum up the "*Total WMS Capital Costs*", "*Total WMS Debt Service*" , and the "*Total WMS Annual Operating Costs*" fields of any sources where the "*Include Source Total Cost numbers in WMS Project Rollup?*" field in the WMS Source section is set to "*Y*".

- "*Calculate Total Cost of WMS based on all Sources?*"- If selected, the "*Total WMS Capital Costs*" and the "*Total WMS Annual Operating Costs*" fields will be calculated by the application. The calculation will sum up the "*Total WMS Capital Costs*", "*Total WMS Debt Service*", and the "*Total WMS Annual Operating Costs*" fields for all WMS Sources related to the WMS Project.

- "*Total WMS Capital Costs*" **–** If the "*Calculate Total Cost of WMS based on Total Cost of Sources chosen for rollup?*" or the "*Calculate Total Cost of WMS based on all Sources?*" fields are not selected this is an editable field. It specifies total capital costs needed to implement a given strategy. Note that total capital cost of implementing a strategy should equal the sum of all capital costs associated with a particular strategy's "*Unique Project ID*" (i.e. several water user groups or wholesale water providers may each have expected capital costs associated with a single strategy). **To further ensure that capital costs are not redundant, capital costs are to be entered into the database application only once for each water management strategy and should be associated only with the expected borrower(s) of these funds.** For example, capital costs for strategies funded by wholesale water providers should be associated with borrowing wholesalers only, not with any retail water users using the water even though they may be affected indirectly through water rates. The number listed in this field will be used to calculate totals for the 2012 State Water Plan.

- "*WMS Term of Debt Service*"– If the "*Calculate Total Cost of WMS based on Total Cost of Sources chosen for rollup?*" or the "*Calculate Total Cost of WMS based on all Sources?*" fields are not selected this is an editable field. It specifies the estimated length or term of the debt service.

- "*Total WMS Annual Operating Costs*" (2010-2060) **–** If the "*Calculate Total Cost of WMS based on Total Cost of Sources chosen for rollup?*" or the "*Calculate Total Cost of*

WMS based on all Sources?" fields are not selected this is an editable field. Enter operating and maintenance costs based on water quantities supplied by a strategy as defined in the TWDB document "*General Guidelines for Regional Water Plan Development.*" The number listed in this field will be used to calculate totals for the 2012 State Water Plan.

- For year 2010, list the average annual total of operation and maintenance for the decade 2010-2019.
- For year 2020, list the average annual total of operation and maintenance 2020-2029.
- For year 2030, list the average annual total of operation and maintenance 2030-2039.
- For year 2040, list the average annual total of operation and maintenance 2040-2049.
- For year 2050, list the average annual total of operation and maintenance 2050-2059.
- For year 2060, list the annual total of operation and maintenance for the year 2060.

- "*Regional Comments*" – An editable field that is optional for providing additional comments from the planning groups pertaining to the water management strategy.

6.2.2 Water Management Strategy Source

The water management strategy source section of the Water Management Strategy module identifies all sources of supply that are part of the water management strategy project. When a source is added to a water management strategy, the following fields will be generated by the database application (these fields are described in section 3.0 of this document):

- "Source or System Name"
- "Source ID"
- "Source Region"
- "Source Type ID"
- "System?"
- "Source County Name"
- "Source County ID"
- "Source Basin Name"
- "*Source Basin ID*"

Additional editable fields include:

- "*Water Quality Improvements*" – Indicates if a strategy source requires water quality improvements.

  - D = desalination of Gulf of Mexico water
  - Q = other water quality enhancements

- "*WMS Online Date*" – An editable field indicating the estimated decade (yyyy) when a strategy source will be operational.

- "*WMS Funding Date*" – An editable field that details the estimated decade (yyyy) when the needed capital funds would be obtained for construction.

- "*Include in State Water Plan?*" – An editable field that details whether a WMS source should be included in the State Water Plan.

  - Y = include the WMS Source, including its supply volume and costs, in the State Water Plan.
  - N = do not include the WMS Source, its supply volume or costs, in the State Water Plan.

- "*Include WMS Source Total Yield numbers in WMS Project Total Yield Rollup?*" – An editable field that details whether a WMS Source should be included in the WMS Project Total Yield calculation.

  - Y = include the WMS Source Total Yield numbers in the WMS Project Total Yield rollup.
  - N = do not include the WMS Source Total Yield numbers in the WMS Project Total Yield rollup.

- "*Calculate Total Yield of Source based on WUG and/or WWP WMS Supply chosen for rollup?*"- If selected, the "*Total Yield of WMS Source*" field will be calculated by the application. The calculation will sum up the "*WUG WMS Supply*" and/or the "*WWP WMS Supply*" fields of any WUGs and/or WWPs where the "*Include WUG WMS Supply numbers in WMS Source Rollup?*" and/or "*Include WWP WMS Supply numbers in WMS Source Rollup?*" fields in the WUG and WWP sections are set to "*Y*".

- "*Calculate Total Yield of WMS Source based on all WUGs and WWPs?*"- If selected, the "*Total Yield of WMS Source*" field will be calculated by the application. The calculation will sum up the "*WUG WMS Supply*" and the "*WWP WMS Supply*" fields for all recommended WUGs and/or WWPs related to the WMS Source.

- "*Total Yield of WMS Source* (2010 – 2060)" – If the "*Calculate Total Yield of WMS Source based on Total Yield of WUGs and/or WWPs chosen for rollup?*" or the "*Calculate Total Yield of WMS Source based on all WUGs and WWPs?*" fields are not selected this is an editable field. It identifies the total yield of a water management strategy source for 2010, 2020, 2030, 2040, 2050, and 2060. This field should include all potential yield from a water management strategy project, not just supplies allocated to water user groups and/or wholesale water providers. For example, if the water management strategy is to develop a new reservoir and only a portion of the firm yield has been allocated to water user groups and/or wholesale water providers and their customers, the firm yield of the new reservoir would be listed in this field. The number

listed in this scenario would be greater than what was listed in the Water User Groups and/or Wholesale Water Providers modules. The number listed in this field will be used to calculate totals for the 2012 State Water Plan.

- "*Include WMS Source Cost numbers in WMS Project Cost Rollup?*" – An editable field that details whether a WMS Source cost numbers should be included in the WMS Project cost calculations.

  - Y = include the WMS Source cost numbers in the WMS Project cost rollup.
  - N = do not include the WMS Source cost numbers in the WMS Project cost rollup.

- "*Calculate Total Cost of WMS Source based on Total Cost of WUGs and/or WWPs chosen for rollup?*"- If selected, the "*Total WMS Source Capital Costs*" and the "*Total WMS Source Annual Operating Costs*" fields will be calculated by the application. The calculation will sum up the "*WMS Capital Costs*", "*WMS Debt Service*" , and the "*WMS Annual Operating Costs*" fields of any WUGs and/or WWPs where the "*Include WUG WMS Cost numbers in WMS Source Rollup?*" and/or "*Include WWP WMS Cost numbers in WMS Source Rollup?*" fields in the WMS WUG and/or WWP sections are set to "*Y*".

- "*Calculate Total Cost of WMS Source based on all WUG and/or WWP WMS Costs?*"- If selected, the "*Total WMS Source Capital Costs*" and the "*Total WMS Source Annual Operating Costs*" fields will be calculated by the application. The calculation will sum up the "*WMS Capital Costs*", "*WMS Debt Service*", and "*WMS Annual Operating Costs*" fields for all recommended WUGs and/or WWPs related to the WMS Source.

- "*Total WMS Source Capital Costs*" **–** If the "*Calculate Total Cost of WMS Source based on Total Cost of WUGs and/or WWPs chosen for rollup?*" or the "*Calculate Total Cost of WMS Source based on all WUGs and WWPs?*" fields are not selected this is an editable field. It specifies total capital costs needed to implement a given strategy. Note that total capital cost of implementing a strategy should equal the sum of all capital costs associated with a particular strategy's "*Unique Project ID*" (i.e. several water user groups or wholesale water providers may each have expected capital costs associated with a single strategy). **To further ensure that capital costs are not redundant, capital costs are to be entered into the database application only once for each water management strategy and should be associated only with the expected borrower(s) of these funds.** For example, capital costs for strategies funded by wholesale water providers should be associated with borrowing wholesalers only, not with any retail water users using the water even though they may be affected indirectly through water rates. The number listed in this field will be used to calculate totals for the 2012 State Water Plan.

- "*WMS Source Term of Debt Service*"– If the "*Calculate Total Cost of WMS Source based on Total Cost of WUGs and/or WWPs chosen for rollup?*" or the "*Calculate Total Cost of WMS Source based on all WUGs and WWPs?*" fields are not selected this is an editable field. It specifies the estimated length or term of the debt service.

- "*Total WMS Source Annual Operating Costs* (2010-2060)" **–** If the "*Calculate Total Cost of WMS Source based on Total Cost of WUGs and/or WWPs chosen for rollup?*" or the "*Calculate Total Cost of WMS Source based on all WUGs and WWPs?*" fields are not selected this is an editable field. Enter operating and maintenance costs based on water quantities supplied by a strategy as defined in the TWDB document "*General Guidelines for Regional Water Plan Development.*" The number listed in this field will be used to calculate totals for the 2012 State Water Plan.

    - For year 2010, list the average annual total of operation and maintenance for the decade 2010-2019.
    - For year 2020, list the average annual total of operation and maintenance 2020-2029.
    - For year 2030, list the average annual total of operation and maintenance 2030-2039.
    - For year 2040, list the average annual total of operation and maintenance 2040-2049.
    - For year 2050, list the average annual total of operation and maintenance 2050-2059.
    - For year 2060, list the annual total of operation and maintenance for the year 2060.

- "*Regional Comments*" – An editable field that is optional for providing additional comments from the planning groups pertaining to the water management strategy source.

6.2.3 Water Management Strategies for Water User Groups

A description of this section of the Water Management Strategy module is included in section 4.0 of this document.

6.2.4 Water Management Strategies for Wholesale Water Providers

A description of this section of the Water Management Strategy module is included in section 5.0 of this document.