National Hydrography Dataset - Reach Addressing Database

Physical Design Document - Version 1.1

August 10, 2001

CONTENTS

1.0 OVERVIEW

The National Hydrography Dataset (NHD) is a database that interconnects and uniquely identifies the millions of stream segments or reaches that comprise the nations' surface water drainage system. It is based upon the USGS 1:100,000-scale Digital Line Graph (DLG) hydrography dataset integrated with reach-related information from the USEPA Reach File Version 3.0-Alpha release (RF3-Alpha). The NHD provides a national framework for assigning reach addresses to water quality related entities, such as industrial Clean Water Act Section 305(b) and 303(d) waterbodies, and Designated Uses, etc. Reach addresses establish the locations of these entities relative to one another within the NHD surface water drainage network in a manner similar to street addresses. The assignment of reach addresses is accomplished through a process known as reach indexing.

This document describes the physical structure for the NHD Reach Address Database (RAD) that stores NHD geometry and feature attribute tables along with reach indexed information as event tables. Event tables are the intermediary linkage between the NHD and EPA programmatic data stored in other databases such as Total Maximum Daily Load (TMDL) Tracking System, National Assessment Database, Water Quality Standards Database (WQSDB), and Envirofacts. The goal for the NHD RAD is to facilitate access by Web-based GIS applications. The technical architecture for this development is the Environmental Systems Research Institute's (ESRI) Spatial Database Engine (SDE) and Oracle.

This document contains a section describing the tablespace structure, the database design, and the data dictionary for the NHD RAD. The data dictionary details the data elements in each table in the database. The data, event, and metadata table structures are described in Appendix A. Each program system will contain six of the event and related metadata tables. The index and constraint table structures are described in Appendix B.

2.0 TABLESPACE DESIGN AND SIZING

The NHD RAD will contain nine tablespaces. This division of tablespaces provides separate locations in which to place each type of data in addition to supplying locations for required Oracle and SDE tables. The physical separation of a table and its indexes provides for increased performance as well as facilitating data management of the tables. On the following page, Tables 1 and 2 show the tablespaces, sizes, and descriptions for the NHD RAD.

Table 1. NHD RAD Tablespace Size		
Tablespace Name	**Size (MB)**	**Description**
ATTRIBUTE_DATA	1500	This tablespace holds all NHD and event non-spatial data including the metadata.
ATTR_INDEX	1500	This tablespace holds all nonspatial attribute indexes.
EVT_DATA	350	This tablespace holds the event business tables and the related SDE "S" and "F" tables.
RBS	500	This tablespace is a system tablespace containing all Oracle rollback segments (RBS) for the RAD.
SDE	60	This is the default tablespace for the *sde* user. This tablespace houses the Version and Layers tables which are created the first time the SDE server is started for the Oracle instance (the RAD).
SDE_DATA	9,000	This tablespace holds the NHD spatial data within the RAD. It contains the NHD business tables and the related SDE "S" and "F" tables.
SDE_INDEX	3,000	This tablespace holds the SDE coordinate bounding information for all layers. This tablespace also contains all spatial data related indexes: A1_IX1, F1_UK1, S1_IX1, and S1_IX2.
SYSTEM	500	This tablespace holds the Oracle system information.
TEMP	500	This is the temporary tablespace which is used by Oracle during operations such as sorts within Structured Query Language (SQL) queries.

Table 2. NHD RAD Estimated Total Sizes	
Total Sizes for NHD RAD (Estimated)	**Size (in MB)**
NHD Portion of the NHD RAD	17,000
Event Table Portion of the NHD RAD	400

3.0 NHD RAD DATABASE DIAGRAM

The diagram on the following page shows the tables in the NHD RAD database as well as their relationship to each other. For the event tables, only one table of each type of event (point, line, and area) are shown; however, each program system in the database will have one table of each type. Similarly, the event table metadata tables are represented by one graphic, however, each event table will have a corresponding metadata table. Therefore, there will be one metadata table for each type of event table for each program system. There are too many columns in the metadata table to be shown on the diagram. For a complete list of the columns in the metadata tables, please refer to the data dictionary in Appendix A.

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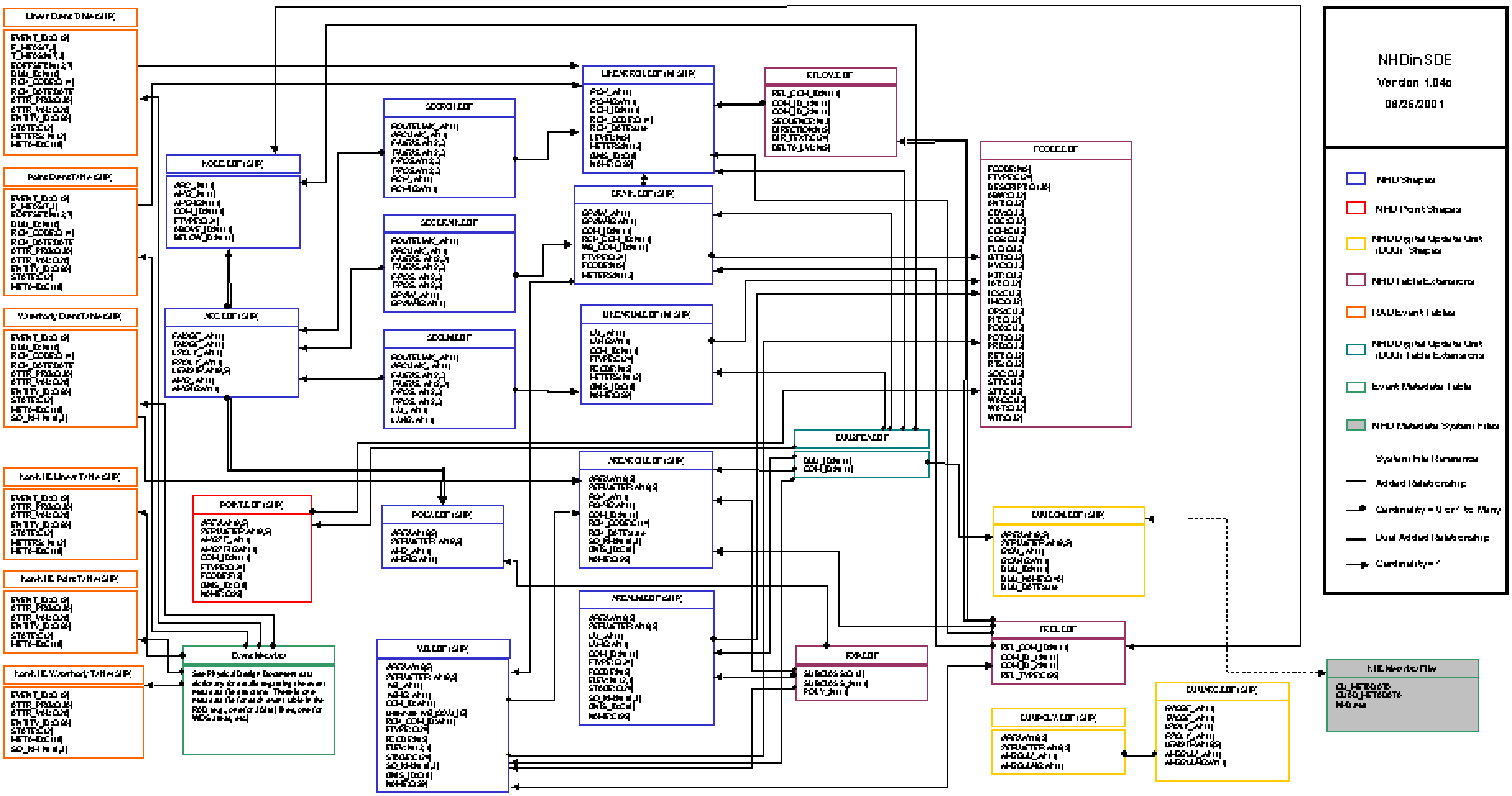

4.0 DATA DICTIONARY

Each table in the NHD RAD is described in Appendix A as a separate table except for the event tables and the event metadata tables. Each event table has a corresponding metadata table. There is, however, only one metadata table description, and the table descriptions are the same for the different program system event tables of the same type.

The "Source" column in the table descriptions refers to the source of the column and the data populating it. In some cases, the column can be traced to more than one source. In these cases, the description will provide additional clarification regarding the source contributions. The possible source values and their descriptions are found in Table 3.

Table 3. Source Descriptions

Source Name	Description
FOD	These columns and their data come from the FOD and only change when the data in the FOD is updated.
SDE	These columns are required constructs of the SDE data model.
NHDinARC	An ArcInfo construct which is a required part of the ArcInfo data structure. The values in these columns are not constant for a feature.
PROGSYS	These columns and their data come from EPA program system databases.

Most of the description text for the NHD tables is taken from *The National Hydrography Dataset, Introducing the NHDinARC* draft document.

In Appendix A, the NHD tables are presented in order alphabetically by table name. The column names in bold indicate primary key fields. The NHD tables are presented first, followed by the event tables and the event metadata tables. For the NHD portion of the data dictionary, each object described is a unique object; i.e., there is only one of each described object. For the event tables and event metadata tables each of the three event tables described are generic objects: one of each exists for each program system in the RAD. In Table 4, each program system with event tables in the RAD is listed along with any specific notes regarding relationships to external databases, non-standard implementation in the RAD, or other notes of importance.

Table 4. Program System Events

Program System	Abbreviation	Notes
303(d)	303d	Standard event table structure.

Table 4. Program System Events		
Program System	**Abbreviation**	**Notes**
305(b)	305b	Standard event table structure.
Water Quality Standards	WQS	Standard event table structure.
Beaches	BEACH	Standard event table structure. Contains additional external attribute table with foreign key relationship.
Drinking Water Intakes	DWI	Standard event table structure. Contains additional external attribute table with foreign key relationship.
Fish Advisories	FISH	Standard event table structure.
Grants Reporting and Tracking System	GRTS	Standard event table structure.
No Discharge Zones	NDZ	Standard event table structure. Contains the additional non-NHD event tables.

Appendix A also contains the structure for non-NHD event tables. These are event tables that are not referenced to the NHD, but whose shapes have been referenced from a different data source. These tables may take the form of lines, points, or areas as well.

For event maintenance, there are another set of temporary layers and tables not previously described that exist in the database. These layers and tables are considered temporary because they remain empty except during the event maintenance process. Table 5 contains a listing of these layers and tables and a brief description of their purpose. Appendix A contains the structure for the TEMP_TRANS, TEMP_METATRANS, TEMP_RCHCODE, and TEMP_METAID tables.

Table 5. Temporary Tables	
Table Name	**Description**
TEMP_LINE	Intermediate layer used to load linear event data. The structure is the same as all linear event layers.
TEMP_POINT	Intermediate layer used to load point event data. The structure is the same as all point event layers.

Table 5. Temporary Tables	
Table Name	**Description**
TEMP_AREA	Intermediate layer used to load area event data. The structure is the same as all area event layers.
TEMP_NS_LINE	Intermediate layer used to load linear non-NHD event data. The structure is the same as all non-NHD linear event layers.
TEMP_NS_POINT	Intermediate layer used to load point non-NHD event data. The structure is the same as all non-NHD point event layers.
TEMP_NS_AREA	Intermediate layer used to load area non-NHD event data. The structure is the same as all non-NHD area event layers.
TEMP_LINE_M	Intermediate table used to load linear metadata data. The structure is the same as all linear metadata tables.
TEMP_POINT_M	Intermediate table used to load point metadata data. The structure is the same as all point metadata tables.
TEMP_AREA_M	Intermediate table used to load area metadata data. The structure is the same as all area metadata tables.
TEMP_TRANS	Intermediate table containing event transaction information (Add, Delete, Modify). The structure is shown in Appendix A.
TEMP_METATRANS	Intermediate table containing event metadata transaction information (Add, Delete, Modify). The structure is shown in Appendix A.
TEMP_RCHCODE	Intermediate table containing reach codes used during several data checks in the maintenance process. The structure is shown in Appendix A.
TEMP_METAID	Intermediate table containing meta_id used during several data checks in the maintenance process. The structure is shown in Appendix A.

Also included in the database is a states table called RAD_STATE_*ps* where "*ps*" refers to a particular program system. These RAD_STATE_*ps* tables contain the state information necessary to perform the event data migration from the intranet to the internet. Each table contains one item called state that contains the stat abbreviation for each state's data to be moved from the intranet to the internet.

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APPENDIX A

NHD RAD Table Data Dictionary

ARC				
Column Name	**Data Type**	**Width**	**Description**	**Source**
FNODE_	NUMBER	11	ArcInfo internal sequence number for the from node of this feature.	NHDinARC
TNODE_	NUMBER	11	ArcInfo internal sequence number for the to node of this feature.	NHDinARC
LPOLY_	NUMBER	11	ArcInfo internal sequence number for the polygon to the left of this feature.	NHDinARC
RPOLY_	NUMBER	11	ArcInfo internal sequence number for the polygon to the right of this feature.	NHDinARC
LENGTH	NUMBER	18.5	ArcInfo-calculated length of each feature. In units of degrees (not a meaningful measurement).	NHDinARC
NHD_	NUMBER	11	ArcInfo internal sequence number.	NHDinARC
NHD_ID	NUMBER	11	ArcInfo feature ID.	NHDinARC
FID	NUMBER	38	Manages the relationship between the business table and the feature table. Maintained by SDE and unique for the spatial column.	SDE

AREALM				
Column Name	**Data Type**	**Width**	**Description**	**Source**
AREA	NUMBER	18.5	ArcInfo-calculated area of each feature. In units of square degrees (not a meaningful measurement).	NHDinARC

AREALM				
Column Name	**Data Type**	**Width**	**Description**	**Source**
PERIMETER	NUMBER	18.5	ArcInfo-calculated perimeter of each feature. In units of degrees (not a meaningful measurement).	NHDinARC
LM_	NUMBER	11	ArcInfo internal sequence number.	NHDinARC
LM_ID	NUMBER	11	ArcInfo feature ID.	NHDinARC
COM_ID	NUMBER	11	Unique identifier of the NHD feature or reach.	FOD
FTYPE	VARCHAR2	24	Type of NHD feature.	FOD
FCODE	NUMBER	5	Numeric value that encodes the type and values for a set of characteristics for an NHD feature. This five digit code has two parts: the first three digits encode the feature type; the last two digits encode values for a set of characteristics associated with the feature.	FOD
ELEV	NUMBER	12.1	Elevation of the feature in meters above the vertical datum. In the initial release of NHD, only area to be submerged and inundation area in the landmark theme may have elevations. Most of these features do not have a value for elevation, so -9998 (unspecified) is the most common value. For all other feature types, the value for elevation is -9999 (not applicable).	FOD
STAGE	VARCHAR2	24	Height of the water surface which is the basis for the elevation.	FOD
SQ_KM	NUMBER	18.3	The area of the feature in square kilometers.	FOD

AREALM				
Column Name	**Data Type**	**Width**	**Description**	**Source**
	VARCHAR2	8	The GNIS identifier of the feature name. A null value means the name is not populated.	FOD
NAME	VARCHAR2	99	The text of the feature name. A null means that the name is not populated.	FOD
FID	NUMBER	38	Manages the relationship between the business table and the feature table. Maintained by SDE and unique for the spatial column.	SDE

AREARCH				
Column Name	**Data Type**	**Width**	**Description**	**Source**
AREA	NUMBER	18.5	ArcInfo-calculated area of each feature. In units of square degrees (not a meaningful measurement).	NHDinARC
PERIMETER	NUMBER	18.5	ArcInfo-calculated perimeter of each feature. In units of degrees (not a meaningful measurement).	NHDinARC
RCH_	NUMBER	11	ArcInfo internal sequence number.	NHDinARC
RCH_ID	NUMBER	11	ArcInfo feature ID.	NHDinARC
COM_ID	NUMBER	11	Unique identifier of the NHD feature or reach.	FOD
RCH_CODE	VARCHAR2	14	A numeric code that uniquely identifies a reach. This 14 digit code has two parts: the first eight digits are the HUC for the CU in which the reach is located; the last six digits are a sequentially-ordered randomly assigned number.	FOD
RCH_DATE	VARCHAR2	8	Date that the RCH_CODE was assigned (formatted: YYYYMMDD).	FOD
SQ_KM	NUMBER	18.3	The area of the feature in square kilometers.	FOD
GNIS_ID	VARCHAR2	8	The GNIS identifier of the feature name. A null value means the name is not populated.	FOD
NAME	VARCHAR2	99	The text of the feature name. A null means that the name is not populated.	FOD

AREARCH				
Column Name	**Data Type**	**Width**	**Description**	**Source**
FID	NUMBER	38	Manages the relationship between the business table and the feature table. Maintained by SDE and unique for the spatial column.	SDE

DRAIN				
Column Name	**Data Type**	**Width**	**Description**	**Source**
DRAIN_	NUMBER	11	ArcInfo internal sequence number.	NHDinARC
DRAIN_ID	NUMBER	11	ArcInfo feature ID.	NHDinARC
COM_ID	NUMBER	11	Unique identifier of the NHD feature or reach.	FOD
RCH_COM_ID	NUMBER	11	Unique identifier of the transport reach or coastline reach in the LINEARRCH table of which the network element is part.	FOD
WB_COM_ID	NUMBER	11	Unique identifier of the waterbody reach in AREARCH table that the network element (artificial path only) flows through. Records in this table may be related to the COM_ID column of the AREARCH table. Network elements which are not artificial paths through waterbodies will have values of -9999 (not applicable). In the initial release of NHD, this column is not populated, and all features have a value of -9998.	FOD
FTYPE	VARCHAR2	24	Type of NHD feature.	FOD

DRAIN				
Column Name	**Data Type**	**Width**	**Description**	**Source**
FCODE	NUMBER	5	Numeric code that encodes the type and values for a set of characteristics for an NHD feature. This five digit code has two parts: the first three digits encode the feature type; the last two digits encode values for a set of characteristics associated with the feature.	FOD
METERS	NUMBER	12	The length of the NHD feature in meters.	FOD
FID	NUMBER	38	Manages the relationship between the business table and the feature table. Maintained by SDE and unique for the spatial column.	SDE

DUU2FEA				
Column Name	**Data Type**	**Width**	**Description**	**Source**
DUU_ID	NUMBER	11	Unique identifier of the digital update unit.	NHDinARC
COM_ID	NUMBER	11	Unique identifier of the NHD feature or reach.	FOD

DUUARC				
Column Name	**Data Type**	**Width**	**Description**	**Source**
FNODE_	NUMBER	11	ArcInfo-calculated beginning node of the feature (not a meaningful value).	NHDinARC

DUUARC				
Column Name	**Data Type**	**Width**	**Description**	**Source**
TNODE_	NUMBER	11	ArcInfo-calculated ending node of the feature (not a meaningful value).	NHDinARC
LPOLY_	NUMBER	11	ArcInfo-calculated polygon to the left of the feature (not a meaningful value).	NHDinARC
RPOLY_	NUMBER	11	ArcInfo-calculated polygon to the right of the feature (not a meaningful value).	NHDinARC
LENGTH	NUMBER	18.5	ArcInfo-calculated length of each feature. In units of degrees (not a meaningful measurement).	NHDinARC
NHDDUU_	NUMBER	11	ArcInfo internal sequence number.	NHDinARC
NHDDUU_ID	NUMBER	11	ArcInfo feature ID.	NHDinARC
FID	NUMBER	38	Manages the relationship between the business table and the feature table. Maintained by SDE and unique for the spatial column.	SDE

DUUDOM				
Column Name	**Data Type**	**Width**	**Description**	**Source**
AREA	NUMBER	18.5	ArcInfo-calculated area of each feature. In units of square degrees (not a meaningful measurement).	NHDinARC
PERIMETER	NUMBER	18.5	ArcInfo-calculated perimeter of each feature. In units of degrees (not a meaningful measurement).	NHDinARC
DOM_	NUMBER	11	ArcInfo internal sequence number.	NHDinARC
DOM_ID	NUMBER	11	ArcInfo feature ID.	NHDinARC

DUUDOM				
Column Name	**Data Type**	**Width**	**Description**	**Source**
DUU_ID	NUMBER	11	Unique identifier of the digital update unit.	FOD
DUU_NAME	VARCHAR2	40	Name of the digital update unit and the name of the ".met" file that contains the metadata entries for the digital update unit. For the cataloging unit, the DUU_NAME is the 8-digit CU identifier; for the 1:100,000-scale quadrangle, the DUU_NAME is the 3-digit abbreviation for the 100K quadrangle.	FOD
DUU_DATE	VARCHAR2	8	Date that the DUU was created (formatted: YYYYMMDD).	FOD
FID	NUMBER	38	Manages the relationship between the business table and the feature table. Maintained by SDE and unique for the spatial column.	SDE

DUUPOLY				
Column Name	**Data Type**	**Width**	**Description**	**Source**
AREA	NUMBER	18.5	ArcInfo-calculated area of each feature. In units of square degrees (not a meaningful measurement).	NHDinARC
PERIMETER	NUMBER	18.5	ArcInfo-calculated perimeter of each feature. In units of degrees (not a meaningful measurement).	NHDinARC
NHDDUU_	NUMBER	11	ArcInfo internal sequence number.	NHDinARC
NHDDUU_ID	NUMBER	11	ArcInfo feature ID.	NHDinARC

DUUPOLY				
Column Name	**Data Type**	**Width**	**Description**	**Source**
FID	NUMBER	38	Manages the relationship between the business table and the feature table. Maintained by SDE and unique for the spatial column.	SDE

FCODE				
Column Name	**Data Type**	**Width**	**Description**	**Source**
FCODE	NUMBER	5	Numeric code that encodes the type and values for a set of characteristics for an NHD feature. This five digit code has two parts: the first three digits encode the feature type; the last two digits encode values for a set of characteristics associated with the feature.	FOD
FTYPE	VARCHAR2	24	Type of NHD feature.	FOD
DESCRIPT	VARCHAR2	130	Textual definition of the FCODE value.	FOD
ABW	VARCHAR2	32	Abovewater Portion.	FOD
ANT	VARCHAR2	32	Anchorage Type.	FOD
CDY	VARCHAR2	32	Canal/Ditch Type.	FOD
CGC	VARCHAR2	32	Glaciation Category.	FOD
COM	VARCHAR2	32	Construction Material.	FOD
COS	VARCHAR2	32	Cover Status.	FOD
FLO	VARCHAR2	32	Flow Status.	FOD
GTT	VARCHAR2	32	Gate Type.	FOD
HYC	VARCHAR2	32	Hydrographic Category.	FOD
HZT	VARCHAR2	32	Hazard Zone Category.	FOD
IAT	VARCHAR2	32	Inundation Area Type.	FOD

FCODE				
Column Name	**Data Type**	**Width**	**Description**	**Source**
ICS	VARCHAR2	32	Inundation Control Status.	FOD
IMC	VARCHAR2	32	Ice Mass category.	FOD
OPS	VARCHAR2	32	Operational Status.	FOD
PIT	VARCHAR2	32	Pipeline Type.	FOD
POA	VARCHAR2	32	Positional Accuracy.	FOD
POT	VARCHAR2	32	Post Type.	FOD
PRD	VARCHAR2	32	Product.	FOD
RET	VARCHAR2	32	Reservoir Type.	FOD
RTS	VARCHAR2	32	Relationship to Surface.	FOD
SOC	VARCHAR2	32	Sea/Ocean Category.	FOD
STT	VARCHAR2	32	Snag/Stump Type.	FOD
SZT	VARCHAR2	32	Special Use ZoneType.	FOD
WAC	VARCHAR2	32	Water Characteristics.	FOD
WAT	VARCHAR2	32	Wall Type.	FOD
WIT	VARCHAR2	32	Water Intake/Outflow Type.	FOD

FREL				
Column Name	**Data Type**	**Width**	**Description**	**Source**
REL_COM_ID	NUMBER	11	Unique identifier of the NHD relationship.	FOD
COM_ID_1	NUMBER	11	Unique identifier of the first NHD feature in the relationship.	FOD
COM_ID_2	NUMBER	11	Unique identifier of the second NHD feature in the relationship.	FOD
REL_TYPE	VARCHAR2	99	Type of relationship.	FOD

LINEARLM				
Column Name	**Data Type**	**Width**	**Description**	**Source**
LM_	NUMBER	11	ArcInfo internal sequence number.	NHDinARC
LM_ID	NUMBER	11	ArcInfo feature ID.	NHDinARC
COM_ID	NUMBER	11	Unique identifier of the NHD feature or reach.	FOD
FTYPE	VARCHAR2	24	Type of NHD feature.	FOD
FCODE	NUMBER	5	Numeric value that encodes the type and values for a set of characteristics for an NHD feature. This five digit code has two parts: the first three digits encode the feature type; the last two digits encode values for a set of characteristics associated with the feature.	FOD
METERS	NUMBER	12	Length of the NHD feature in meters.	FOD
GNIS_ID	VARCHAR2	8	The GNIS identifier of the feature name. A null value means the name is not populated.	FOD
NAME	VARCHAR2	99	The text of the feature name. A null means that the name is not populated.	FOD
FID	NUMBER	38	Manages the relationship between the business table and the feature table. Maintained by SDE and unique for the spatial column.	SDE

LINEARRCH				
Column Name	**Data Type**	**Width**	**Description**	**Source**
RCH_	NUMBER	11	ArcInfo internal sequence number.	NHDinARC
RCH_ID	NUMBER	11	ArcInfo feature ID.	NHDinARC
COM_ID	NUMBER	11	Unique identifier of the NHD feature or reach.	FOD
RCH_CODE	VARCHAR2	14	A numeric code that uniquely identifies a reach. This 14 digit code has two parts: the first eight digits are the HUC for the CU in which the reach is located; the last six digits are a sequentially-ordered randomly assigned number.	FOD
RCH_DATE	VARCHAR2	8	Date that the RCH_CODE was assigned (formatted: YYYYMMDD).	FOD
STRM_LEVEL	NUMBER	5	Stream Level. Has a value range of 1 to 99 and the value -9998 (unspecified).	FOD
METERS	NUMBER	12	Length of the NHD feature in meters.	FOD
GNIS_ID	VARCHAR2	8	The GNIS identifier of the feature name. A null value means the name is not populated.	FOD
NAME	VARCHAR2	99	The text of the feature name. A null means that the name is not populated.	FOD
FID	NUMBER	38	Manages the relationship between the business table and the feature table. Maintained by SDE and unique for the spatial column.	SDE

NODE				
Column Name	**Data Type**	**Width**	**Description**	**Source**
ARC_	NUMBER	11	ArcInfo internal sequence number of one of the arcs connected to that node.	NHDinARC
NHD_	NUMBER	11	ArcInfo internal sequence number.	NHDinARC
NHD_ID	NUMBER	11	ArcInfo feature ID.	NHDinARC
COM_ID	NUMBER	11	Unique identifier of the NHD feature or reach.	FOD
FTYPE	VARCHAR2	24	Type of NHD feature.	FOD
ABOVE_ID	NUMBER	11	Unique identifier of the NHD feature or reach.	FOD
BELOW_ID	NUMBER	11	Unique identifier of the NHD feature or reach.	FOD
FID	NUMBER	38	Manages the relationship between the business table and the feature table. Maintained by SDE and unique for the spatial column.	SDE

POINT				
Column Name	**Data Type**	**Width**	**Description**	**Source**
AREA	NUMBER	18.5	ArcInfo-calculated area of each feature. Always 0.00000.	NHDinARC
PERIMETER	NUMBER	18.5	ArcInfo-calculated perimeter of each feature. Always 0.00000.	NHDinARC
NHDPT_	NUMBER	11	ArcInfo internal sequence number.	NHDinARC
NHDPT_ID	NUMBER	11	ArcInfo feature ID.	NHDinARC
COM_ID	NUMBER	11	Unique identifier of the NHD feature or reach.	FOD
FTYPE	VARCHAR2	24	Type of NHD feature.	FOD

POINT				
Column Name	**Data Type**	**Width**	**Description**	**Source**
FCODE	NUMBER	5	Numeric value that encodes the type and values for a set of characteristics for an NHD feature. This five digit code has two parts: the first three digits encode the feature type; the last two digits encode values for a set of characteristics associated with the feature.	FOD
GNIS_ID	VARCHAR2	8	The GNIS identifier of the feature name. A null value means the name is not populated.	FOD
NAME	VARCHAR2	99	The text of the feature name. A null means that the name is not populated.	FOD
FID	NUMBER	38	Manages the relationship between the business table and the feature table. Maintained by SDE and unique for the spatial column.	SDE

POLY				
Column Name	**Data Type**	**Width**	**Description**	**Source**
AREA	NUMBER	18.5	ArcInfo-calculated area of each feature. In units of square degrees (not a meaningful measurement).	NHDinARC
PERIMETER	NUMBER	18.5	ArcInfo-calculated perimeter of each feature. In units of degrees (not a meaningful measurement).	NHDinARC
NHD_	NUMBER	11	ArcInfo internal sequence number.	NHDinARC
NHD_ID	NUMBER	11	ArcInfo feature ID.	NHDinARC

POLY				
Column Name	**Data Type**	**Width**	**Description**	**Source**
FID	NUMBER	38	Manages the relationship between the business table and the feature table. Maintained by SDE and unique for the spatial column.	SDE

RFLOW				
Column Name	**Data Type**	**Width**	**Description**	**Source**
REL_COM_ID	NUMBER	11	Unique identifier of the NHD relationship.	FOD
COM_ID_1	NUMBER	11	The first reach of the flow relationship. Relates to COM_ID in LINEARRCH table. Has value of "0" if DIR_TEXT is "Network Start".	FOD
COM_ID_2	NUMBER	11	The second reach of the flow relationship. Relates to COM_ID in LINEARRCH table. Has value of "0" if DIR_TEXT is "Network End".	FOD
SEQUENCE	NUMBER	3	This attribute is used to order the inflows and outflows along the interior of the second reach. When sequence number is 0, the first and second reaches touch end-to-end.	FOD
DIRECTION	NUMBER	5	Integer code for direction of flow.	FOD
DIR_TEXT	VARCHAR2	24	This attribute encodes the corresponding DIRECTION value in words.	FOD

RFLOW				
Column Name	**Data Type**	**Width**	**Description**	**Source**
DELTA_LVL	NUMBER	5	The difference in level from the first reach to the second reach (LEVEL of first reach minus LEVEL of second reach). The value will be -9999 (not applicable) when the value of the from reach or the to reach is “0". The value will be -9999 when the direction is “Network Start”, “Network End”, or “Non-flowing Connection”.	FOD

RXP				
Column Name	**Data Type**	**Width**	**Description**	**Source**
SUBCLASS	VARCHAR2	13	Identifies the region to which SUBCLASS_ belongs. “RCH” for AREARCH, “WB” for WB, and “LM” for AREALM.	NHDinARC
SUBCLASS_	NUMBER	11	ArcInfo internal sequence number of a shape in SUBCLASS.	NHDinARC
POLY_	NUMBER	11	ArcInfo internal sequence number of a shape in POLY.	NHDinARC

SECDRAIN				
Column Name	**Data Type**	**Width**	**Description**	**Source**
ROUTELINK_	NUMBER	11	ArcInfo internal sequence number. Relates to DRAIN_ in DRAIN table.	NHDinARC
ARCLINK_	NUMBER	11	ArcInfo internal sequence number. Relates to NHD_ in ARC table.	NHDinARC

SECDRAIN				
Column Name	**Data Type**	**Width**	**Description**	**Source**
F_MEAS	NUMBER	9.3	Start measure of the section.	NHDinARC
T_MEAS	VARCHAR2	9.3	End measure of the section.	NHDinARC
F_POS	VARCHAR2	9.3	Start position of the section, defined as the percentage along the arc from the from-node.	NHDinARC
T_POS	NUMBER	9.3	End position of the section, defined as the percentage along the arc from the from-node.	NHDinARC
DRAIN_	NUMBER	11	ArcInfo internal sequence number for the section.	NHDinARC
DRAIN_ID	VARCHAR2	11	ArcInfo feature ID for the section.	NHDinARC

SECLM				
Column Name	**Data Type**	**Width**	**Description**	**Source**
ROUTELINK_	NUMBER	11	ArcInfo internal sequence number. Relates to LM_ in LINEARLM table.	NHDinARC
ARCLINK_	NUMBER	11	ArcInfo internal sequence number. Relates to NHD_ in ARC table.	NHDinARC
F_MEAS	NUMBER	9.3	Start measure of the section.	NHDinARC
T_MEAS	VARCHAR2	9.3	End measure of the section.	NHDinARC
F_POS	VARCHAR2	9.3	Start position of the section, defined as the percentage along the arc from the from-node.	NHDinARC
T_POS	NUMBER	9.3	End position of the section, defined as the percentage along the arc from the from-node.	NHDinARC
LM_	NUMBER	11	ArcInfo internal sequence number for the section.	NHDinARC

SECLM				
Column Name	**Data Type**	**Width**	**Description**	**Source**
LM_ID	VARCHAR2	11	ArcInfo feature ID for the section.	NHDinARC

SECRCH				
Column Name	**Data Type**	**Width**	**Description**	**Source**
ROUTELINK_	NUMBER	11	ArcInfo internal sequence number. Relates to RCH_ in LINEARRCH table.	NHDinARC
ARCLINK_	NUMBER	11	ArcInfo internal sequence number. Relates to NHD_ in ARC table.	NHDinARC
F_MEAS	NUMBER	9.3	Start measure of the section.	NHDinARC
T_MEAS	VARCHAR2	9.3	End measure of the section.	NHDinARC
F_POS	VARCHAR2	9.3	Start position of the section, defined as the percentage along the arc from the from-node.	NHDinARC
T_POS	NUMBER	9.3	End position of the section, defined as the percentage along the arc from the from-node.	NHDinARC
RCH_	NUMBER	11	ArcInfo internal sequence number for the section.	NHDinARC
RCH_ID	VARCHAR2	11	ArcInfo feature ID for the section.	NHDinARC

WB				
Column Name	**Data Type**	**Width**	**Description**	**Source**
AREA	NUMBER	18.5	ArcInfo-calculated area of each feature. In units of square degrees (not a meaningful measurement).	NHDinARC

WB				
Column Name	**Data Type**	**Width**	**Description**	**Source**
PERIMETER	NUMBER	18.5	ArcInfo-calculated perimeter of each feature. In units of degrees (not a meaningful measurement).	NHDinARC
WB_	NUMBER	11	ArcInfo internal sequence number.	NHDinARC
WB_ID	NUMBER	11	ArcInfo feature ID.	NHDinARC
COM_ID	NUMBER	11	Unique identifier of the NHD feature or reach.	FOD
RCH_COM_ID	NUMBER	11	Unique identifier of the waterbody NHD reach in the AREARCH table.	FOD
FTYPE	VARCHAR2	24	Type of NHD feature.	FOD
FCODE	NUMBER	5	Numeric value that encodes the type and values for a set of characteristics for an NHD feature. This five digit code has two parts: the first three digits encode the feature type; the last two digits encode values for a set of characteristics associated with the feature.	FOD
ELEV	NUMBER	12.1	Elevation of the feature in meters above the vertical datum. In the initial release of NHD, only area to be submerged and inundation area in the landmark theme may have elevations. Most of these features do not have a value for elevation, so -9998 (unspecified) is the most common value. For all other feature types, the value for elevation is -9999 (not applicable).	FOD
STAGE	VARCHAR2	24	Height of the water surface which is the basis for the elevation.	FOD

WB				
Column Name	**Data Type**	**Width**	**Description**	**Source**
SQ_KM	NUMBER	18.3	The area of the feature in square kilometers.	FOD
GNIS_ID	VARCHAR2	8	The GNIS identifier of the feature name. A null value means the name is not populated.	FOD
NAME	VARCHAR2	99	The text of the feature name. A null means that the name is not populated.	FOD
FID	NUMBER	38	Manages the relationship between the business table and the feature table. Maintained by SDE and unique for the spatial column.	SDE

Event Tables

There are three sample event tables shown below. The table structures for each program system are the same, regardless of program system. Only the table name will change from one program system to the next. Not all program systems will have all three types of events. The Beaches program system contains an additional table called RAD_BEACH_INFO.

Note: *ps* is the program system abbreviation (e.g., 303d, 305b, WQS, etc.).

RAD_*ps*_L (Linear Event Table)				
Column Name	**Data Type**	**Width**	**Description**	**Source**
EVENT_ID	VARCHAR2	19	Unique event identifier.	PROGSYS
F_MEAS	NUMBER	7.3	From measure.	PROGSYS
T_MEAS	NUMBER	7.3	To measure.	PROGSYS
EOFFSET	NUMBER	12.7	Event display offset.	PROGSYS
DUU_ID	NUMBER	10	NHD DUU identifier.	PROGSYS

RAD_*ps*_L (Linear Event Table)				
Column Name	**Data Type**	**Width**	**Description**	**Source**
RCH_CODE	VARCHAR2	14	NHD linear reach code: a numeric code that uniquely identifies a reach. This 14 digit code has two parts: the first eight digits are the HUC for the CU in which the reach is located; the last six digits are a sequentially-ordered randomly assigned number.	PROGSYS
RCH_DATE	DATE		Date that the RCH_CODE was assigned (formatted: YYYYMMDD).	PROGSYS
ATTR_PRG	VARCHAR2	30	Attribute type/program being indexed.	PROGSYS
ATTR_VAL	VARCHAR2	20	Attribute value being indexed.	PROGSYS
ENTITY_ID	VARCHAR2	60	Foreign key to external database.	PROGSYS
STATE	VARCHAR2	2	State abbreviation.	PROGSYS
METERS	NUMBER	12	Length of event in meters	PROGSYS
META_ID	VARCHAR2	18	Unique metadata identifier. Used as link to external metadata.	PROGSYS
FID	NUMBER	38	Manages the relationship between the business table and the feature table. Maintained by SDE and unique for the spatial column.	SDE

RAD_*ps*_P (Point Event Table)				
Column Name	**Data Type**	**Width**	**Description**	**Source**
EVENT_ID	VARCHAR2	19	Unique event identifier.	PROGSYS
P_MEAS	NUMBER	7.3	Point measure.	PROGSYS
EOFFSET	NUMBER	12.7	Event display offset	PROGSYS
DUU_ID	NUMBER	10	NHD DUU identifier.	PROGSYS
RCH_CODE	VARCHAR2	14	NHD linear reach code: a numeric code that uniquely identifies a reach. This 14 digit code has two parts: the first eight digits are the HUC for the CU in which the reach is located; the last six digits are a sequentially-ordered randomly assigned number.	PROGSYS
RCH_DATE	DATE		Date that the RCH_CODE was assigned (formatted: YYYYMMDD).	PROGSYS
ATTR_PRG	VARCHAR2	30	Attribute type/program being indexed.	PROGSYS
ATTR_VAL	VARCHAR2	20	Attribute value being indexed.	PROGSYS
ENTITY_ID	VARCHAR2	60	Foreign key to external database.	PROGSYS
STATE	VARCHAR2	2	State abbreviation.	PROGSYS
META_ID	VARCHAR2	18	Unique metadata identifier. Used as link to external metadata.	PROGSYS
FID	NUMBER	38	Manages the relationship between the business table and the feature table. Maintained by SDE and unique for the spatial column.	SDE

RAD_*ps*_A (Waterbody Event Table)				
Column Name	Data Type	Width	Description	Source
EVENT_ID	VARCHAR2	19	Unique event identifier.	PROGSYS
DUU_ID	NUMBER	10	NHD DUU identifier.	PROGSYS
RCH_CODE	VARCHAR2	14	NHD area reach code: a numeric code that uniquely identifies a reach. This 14 digit code has two parts: the first eight digits are the HUC for the CU in which the reach is located; the last six digits are a sequentially-ordered randomly assigned number.	PROGSYS
RCH_DATE	DATE		Date that the RCH_CODE was assigned (formatted: YYYYMMDD).	PROGSYS
ATTR_PRG	VARCHAR2	30	Attribute type/program being indexed.	PROGSYS
ATTR_VAL	VARCHAR2	20	Attribute value being indexed.	PROGSYS
ENTITY_ID	VARCHAR2	60	Foreign key to external database.	PROGSYS
STATE	VARCHAR2	2	State abbreviation.	PROGSYS
SQ_KM	NUMBER	18.3	Area of event in square kilometers.	PROGSYS
META_ID	VARCHAR2	18	Unique metadata identifier. Used as link to external metadata.	PROGSYS
FID	NUMBER	38	Manages the relationship between the business table and the feature table. Maintained by SDE and unique for the spatial column.	SDE

RAD_BEACH_INFO (Additional Beaches Attribute Table)				
Column Name	Data Type	Width	Description	Source
ENTITY_ID	VARCHAR2	255	Foreign key to external database.	PROGSYS
BEACH_NAME	VARCHAR2	255	Name of beach.	PROGSYS
CONTACT_ PERSON	VARCHAR2	255	Name of person to contact.	PROGSYS
CONTACT_ AGENCY	VARCHAR2	255	Name of agency for contact person.	PROGSYS
CONTACT_ PHONE	VARCHAR2	255	Phone number for contact person.	PROGSYS
LENGTH_SWIM SEASON_DAYS	NUMBER	3	Number of days that make up swim season.	PROGSYS
ADVIS_CLOS_ 1999_SS	NUMBER	6	Number of beach advisories/closings during 1999 swim season.	PROGSYS
DAYS_ADVIS_ CLOS_1999_SS	NUMBER	3	Number of days of beach advisories/closings during 1999 swim season.	PROGSYS
URL_MORE_ BEACH_ SURVEY_DATA	VARCHAR2	255	URL to obtain additional information regarding the beach survey data.	PROGSYS

Event Metadata

Four of the attribute metadata sets (five rows for each set) appear only in selected event type metadata files. Two sets (ATTR9, ATTR11) are included in the L and P type files only, one set (ATTR10) are included in the L type files only, and one set (ATTR 12) is included in the L and A type files only.

Note: *ps* is the program system abbreviation (e.g., 303d, 305b, WQS, etc.) and *type* refers to the event type (i.e., L for line, A for area, and P for point).

RAD_*ps_type*_METADATA				
Column Name	**Data Type**	**Width**	**Description**	**Source**
META_ID	VARCHAR2	18	ID of the metadata entry.	PROGSYS
ORIGIN	VARCHAR2	50	Person who created the data.	PROGSYS
PUBDATE	DATE		When the data source was released to the public.	PROGSYS
TITLE	VARCHAR2	30	Title of the metadata entry.	PROGSYS
ABSTRACT	VARCHAR2	254	Brief description of the content in the data.	PROGSYS
PURPOSE	VARCHAR2	30	Intended purpose of the data.	PROGSYS
SUPPLINFO	VARCHAR2	254	Additional information describing the data content.	PROGSYS
NATIVE	VARCHAR2	30	Contains the version of the RIT used to create the events.	PROGSYS
BEGDATE	DATE		When the content was initially created.	PROGSYS
ENDDATE	DATE		When the content was last updated.	PROGSYS
D_CURRENT	VARCHAR2	35	The basis on which the time period of content information is determined.	PROGSYS
PROGRESS	VARCHAR2	30	Specifies if the content is currently worked on.	PROGSYS
D_UPDATE	VARCHAR2	30	Describes how often the data content is updated.	PROGSYS
ACCCONST	VARCHAR2	7	Restrictions and legal prerequisites for accessing the data set.	PROGSYS
USECONST	VARCHAR2	7	Restrictions and legal prerequisites for using the data set after access is granted.	PROGSYS
WESTBC	NUMBER	20.8	The most westerly coordinate.	PROGSYS
SOUTHBC	NUMBER	20.8	The most south coordinate.	PROGSYS

RAD_*ps_type*_METADATA				
Column Name	**Data Type**	**Width**	**Description**	**Source**
NORTHBC	NUMBER	20.8	The most north coordinate.	PROGSYS
EASTBC	NUMBER	20.8	The most easterly coordinate.	PROGSYS
THEMEKT	VARCHAR2	4	Reference to a formally registered thesaurus or a similar authoritative source of theme keyword.	PROGSYS
THEMEKEY1	VARCHAR2	40	Common-use word or phrase used to describe the subject of the data set (1st).	PROGSYS
THEMEKEY2	VARCHAR2	40	Common-use word or phrase used to describe the subject of the data set (2nd).	PROGSYS
THEMEKEY3	VARCHAR2	40	Common-use word or phrase used to describe the subject of the data set (3rd).	PROGSYS
THEMEKEY4	VARCHAR2	40	Common-use word or phrase used to describe the subject of the data set (4th).	PROGSYS
THEMEKEY5	VARCHAR2	40	Common-use word or phrase used to describe the subject of the data set (5th).	PROGSYS
PLACEKT	VARCHAR2	4	Reference to a formally registered thesaurus or a similar authoritative source of place keyword.	PROGSYS
PLACEKEY1	VARCHAR2	40	The geographic name of a location covered by a data set (1st).	PROGSYS
PLACEKEY2	VARCHAR2	40	The geographic name of a location covered by a data set (2nd).	PROGSYS
PLACEKEY3	VARCHAR2	40	The geographic name of a location covered by a data set (3rd).	PROGSYS

RAD_*ps_type*_METADATA				
Column Name	**Data Type**	**Width**	**Description**	**Source**
CNTPER	VARCHAR2	50	Name of contact person, if there are questions concerning the data.	PROGSYS
CNTORG	VARCHAR2	50	Organization for which the person works.	PROGSYS
ADDRTYPE	VARCHAR2	15	Type of address given (mail/physical).	PROGSYS
ADDRESS	VARCHAR2	100	Address of contact person.	PROGSYS
CITY	VARCHAR2	25	City of contact person.	PROGSYS
STATE	VARCHAR2	30	State of contact person.	PROGSYS
POSTAL	VARCHAR2	11	Zip code.	PROGSYS
CNTVOICE	VARCHAR2	10	Voice phone number.	PROGSYS
CNTFAC	VARCHAR2	10	Fax phone number.	PROGSYS
CNTEMAIL	VARCHAR2	75	E-mail of contact person.	PROGSYS
ATTRACCR	VARCHAR2	254	Accuracy of the data.	PROGSYS
HORIZPAR	VARCHAR2	254	Explanation of the accuracy of the horizontal coordinate measurements and a description of the tests used.	PROGSYS
LOGIC	VARCHAR2	7	Explanation of the fidelity of relationships in the data set and tests used.	PROGSYS
COMPLETE	VARCHAR2	7	Information about omissions, selection criteria, generalization, definitions used, and other rules used to derive the data set.	PROGSYS
PROCDESC	VARCHAR2	254	Process used to create the data.	PROGSYS
PROCDATE	DATE		Date the data was processed.	PROGSYS
SRCUSED	VARCHAR2	20	Sources used to create the data.	PROGSYS
ENTTYPD	VARCHAR2	254	Description of the entity type.	PROGSYS
ENTTYPDS	VARCHAR2	55	Description of the entity type.	PROGSYS
MAPPROJN	VARCHAR2	50	Projection of the data.	PROGSYS

RAD_*ps_type*_METADATA				
Column Name	**Data Type**	**Width**	**Description**	**Source**
FEAST	NUMBER	20.10	False easting information of coordinate system.	PROGSYS
FNORTH	NUMBER	20.10	False northing information of coordinate system.	PROGSYS
STDPARLL1	NUMBER	12.8	1st standard parallel of coordinate system.	PROGSYS
STDPARLL2	NUMBER	12.8	2nd standard parallel of coordinate system.	PROGSYS
LONGCM	NUMBER	12.8	Central meridian of coordinate system.	PROGSYS
LATPROJ	NUMBER	12.8	Central parallel of coordinate system.	PROGSYS
SFEQUAT	NUMBER	12.8	Scale factor of projection.	PROGSYS
HORIZDN	VARCHAR2	40	Datum of projection.	PROGSYS
UNIT	VARCHAR2	10	Units of projection/coordinate system.	PROGSYS
DIRECT	VARCHAR2	6	System of objects used to represent space in the dataset.	PROGSYS
S_NUMBER	NUMBER	1.0	Number of sources used.	PROGSYS
ORIGIN*X*[1]	VARCHAR2	30	Originator of *X*th source.	PROGSYS
TITLE*X*[1]	VARCHAR2	150	Title/description of *X*th source.	PROGSYS
SRCSCALE*X*[1]	VARCHAR2	12	Scale of *X*th source.	PROGSYS
TYPESRC*X*[1]	VARCHAR2	20	Media of *X*th source.	PROGSYS
BEGDATE*X*[1]	DATE		Creation date of *X*th source.	PROGSYS
ENDDATE*X*[1]	DATE		Finish date of *X*th source.	PROGSYS
SRCCURR*X*[1]	VARCHAR2	35	Currentness of *X*th source.	PROGSYS
SRCCITEA*X*[1]	VARCHAR2	20	Abbreviation of *X*th source.	PROGSYS
SRCCONTR*X*[1]	NUMBER	3.0	A value in % describing the contribution of the source to the data.	PROGSYS
ATTRLABL1	VARCHAR2	8	Label for the 1st field in the table.	PROGSYS

[1] "*X*" may be a value from 1 to 5.

RAD_*ps_type*_METADATA				
Column Name	**Data Type**	**Width**	**Description**	**Source**
ATTRDEF1	VARCHAR2	170	Definition of the 1st field in the table.	PROGSYS
ATTRDEFS1	VARCHAR2	21	Source of the values for the 1st field.	PROGSYS
RDOMMIN1	VARCHAR2	19	Minimum value.	PROGSYS
RDOMMAX1	VARCHAR2	19	Maximum value.	PROGSYS
ATTRLABL2	VARCHAR2	6	Label for the 2nd field in the table.	PROGSYS
ATTRDEF2	VARCHAR2	65	Definition of the 2nd field in the table.	PROGSYS
ATTRDEFS2	VARCHAR2	3	Source of the values for the 2nd field.	PROGSYS
RDOMMIN2	VARCHAR2	10	Minimum value.	PROGSYS
RDOMMAX2	VARCHAR2	10	Maximum value.	PROGSYS
ATTRLABL3	VARCHAR2	8	Label for the 3rd field in the table.	PROGSYS
ATTRDEF3	VARCHAR2	254	Definition of the 3rd field in the table.	PROGSYS
ATTRDEFS3	VARCHAR2	3	Source of the values for the 3rd field.	PROGSYS
CODESETN3	VARCHAR2	15	Title of the codeset.	PROGSYS
CODESETS3	VARCHAR2	8	Authority for the codeset.	PROGSYS
ATTRLABL4	VARCHAR2	8	Label for the 4th field in the table.	PROGSYS
ATTRDEF4	VARCHAR2	65	Definition of the 4th field in the table.	PROGSYS
ATTRDEFS4	VARCHAR2	3	Source of the values for the 4th field.	PROGSYS
RDOMMIN4	VARCHAR2	8	Minimum value.	PROGSYS
RDOMMAX4	VARCHAR2	8	Maximum value.	PROGSYS
ATTRLABL5	VARCHAR2	5	Label for the 5th field in the table.	PROGSYS

RAD_*ps_type*_METADATA				
Column Name	**Data Type**	**Width**	**Description**	**Source**
ATTRDEF5	VARCHAR2	50	Definition of the 5th field in the table.	PROGSYS
ATTRDEFS5	VARCHAR2	10	Source of the values for the 5th field.	PROGSYS
CODESETN5	VARCHAR2	40	Title of the codeset.	PROGSYS
CODESETS5	VARCHAR2	40	Authority for the codeset.	PROGSYS
ATTRLABL6	VARCHAR2	9	Label for the 6th field in the table.	PROGSYS
ATTRDEF6	VARCHAR2	130	Definition of the 6th field in the table.	PROGSYS
ATTRDEFS6	VARCHAR2	7	Source of the values for the 6th field.	PROGSYS
CODESETN6	VARCHAR2	12	Title of the codeset.	PROGSYS
CODESETS6	VARCHAR2	5	Authority for the codeset.	PROGSYS
ATTRLABL7	VARCHAR2	8	Label for the 7th field in the table.	PROGSYS
ATTRDEF7	VARCHAR2	55	Definition of the 7th field in the table.	PROGSYS
ATTRDEFS7	VARCHAR2	7	Source of the values for the 7th field.	PROGSYS
CODESETN7	VARCHAR2	12	Title of the codeset.	PROGSYS
CODESETS7	VARCHAR2	5	Authority for the codeset.	PROGSYS
ATTRLABL8	VARCHAR2	8	Label for the 8th field in the table.	PROGSYS
ATTRDEF8	VARCHAR2	65	Definition of the 8th field in the table.	PROGSYS
ATTRDEFS8	VARCHAR2	7	Source of the values for the 8th field.	PROGSYS
CODESETN8	VARCHAR2	12	Title of the codeset.	PROGSYS
CODESETS8	VARCHAR2	5	Authority for the codeset.	PROGSYS
ATTRLABL9 (L & P type only)	VARCHAR2	6	Label for the 9th field in the table.	PROGSYS

RAD_*ps_type*_METADATA				
Column Name	**Data Type**	**Width**	**Description**	**Source**
ATTRDEF9 (L & P type only)	VARCHAR2	55	Definition of the 9th field in the table.	PROGSYS
ATTRDEFS9 (L & P type only)	VARCHAR2	20	Source of the values for the 9th field.	PROGSYS
RDOMMIN9 (L & P type only)	VARCHAR2	1	Minimum value.	PROGSYS
RDOMMAX9 (L & P type only)	VARCHAR2	3	Maximum value.	PROGSYS
ATTRLABL10 (L type only)	VARCHAR2	6	Label for the 10th field in the table.	PROGSYS
ATTRDEF10 (L type only)	VARCHAR2	55	Definition of the 10th field in the table.	PROGSYS
ATTRDEFS10 (L type only)	VARCHAR2	20	Source of the values for the 10th field.	PROGSYS
RDOMMIN10 (L type only)	VARCHAR2	1	Minimum value.	PROGSYS
RDOMMAX10 (L type only)	VARCHAR2	3	Maximum value.	PROGSYS
ATTRLABL11 (L & P type only)	VARCHAR2	10	Label for the 11th field in the table.	PROGSYS
ATTRDEF11 (L & P type only)	VARCHAR2	200	Definition of the 11th field in the table.	PROGSYS
ATTRDEFS11 (L & P type only)	VARCHAR2	20	Source of the values for the 11th field.	PROGSYS
CODESETN11 (L & P type only)	VARCHAR2	20	Minimum value.	PROGSYS
CODESETS11 (L & P type only)	VARCHAR2	20	Maximum value.	PROGSYS
ATTRLABL12 (L & A type only)	VARCHAR2	10	Label for the 12th field in the table.	PROGSYS

RAD_*ps_type*_METADATA				
Column Name	**Data Type**	**Width**	**Description**	**Source**
ATTRDEF12 (L & A type only)	VARCHAR2	52	Definition of the 12th field in the table.	PROGSYS
ATTRDEFS12 (L & A type only)	VARCHAR2	20	Source of the values for the 12th field.	PROGSYS
CODESETN12 (L & A type only)	VARCHAR2	20	Minimum value.	PROGSYS
CODESETS12 (L & A type only)	VARCHAR2	20	Maximum value.	PROGSYS
METD	DATE		Date when the metadata was created.	PROGSYS
M_CNTPER	VARCHAR2	50	Name of the contact person, if there are questions concerning the data.	PROGSYS
M_CNTORG	VARCHAR2	50	Organization for which the person works.	PROGSYS
M_ADDRTYPE	VARCHAR2	15	Type of address given below.	PROGSYS
M_ADDRESS	VARCHAR2	100	Address of contact person.	PROGSYS
M_CITY	VARCHAR2	25	City of contact person.	PROGSYS
M_STATE	VARCHAR2	30	State of contact person.	PROGSYS
M_POSTAL	VARCHAR2	11	Zip code.	PROGSYS
M_CNTVOICE	VARCHAR2	10	Voice phone number.	PROGSYS
M_CNTFAC	VARCHAR2	10	Fax phone number.	PROGSYS
M_CNTEMAIL	VARCHAR2	75	E-mail of contact person.	PROGSYS
METSTDN	VARCHAR2	55	The name of the metadata standard used to document the data set.	PROGSYS
METSTDV	VARCHAR2	45	Identification of the version of the metadata standard used to document the data set.	PROGSYS

RAD_NS_*ps*_A (Non Standard Waterbody Event Table)				
Column Name	**Data Type**	**Width**	**Description**	**Source**
EVENT_ID	VARCHAR2	19	Unique event identifier.	PROGSYS
ATTR_PRG	VARCHAR2	30	Attribute Type/Program being indexed.	PROGSYS
ATTR_VAL	VARCHAR2	20	Attribute Value being indexed.	PROGSYS
ENTITY_ID	VARCHAR2	60	Foreign Key to external database.	PROGSYS
STATE	VARCHAR2	2	State Abbreviation.	PROGSYS
SQ_KM	NUMBER	18.3	Area of event in square kilometers.	PROGSYS
META_ID	VARCHAR2	18	Unique Metadata Identifier.	PROGSYS
FID	NUMBER	38	Manages the relationship between the business table and the feature table. Maintained by SDE and unique for the spatial column.	SDE

RAD_NS_*ps*_P (Non Standard Point Event Table)				
Column Name	**Data Type**	**Width**	**Description**	**Source**
EVENT_ID	VARCHAR2	19	Unique Event Identifier.	PROGSYS
ATTR_PRG	VARCHAR2	30	Attribute Type/Program being indexed.	PROGSYS
ATTR_VAL	VARCHAR2	20	Attribute Value being indexed.	PROGSYS
ENTITY_ID	VARCHAR2	60	Foreign Key to external database.	PROGSYS
STATE	VARCHAR2	2	State Abbreviation.	PROGSYS
META_ID	VARCHAR2	18	Unique Metadata Identifier.	PROGSYS
FID	NUMBER	38	Manages the relationship between the business table and the feature table. Maintained by SDE and unique for the spatial column.	SDE

RAD_NS_*ps*_L (Non Standard Linear Event Table)				
Column Name	**Data Type**	**Width**	**Description**	**Source**
EVENT_ID	VARCHAR2	19	Unique Event Identifier.	PROGSYS
ATTR_PRG	VARCHAR2	30	Attribute Type/Program being indexed.	PROGSYS
ATTR_VAL	VARCHAR2	20	Attribute Value being indexed.	PROGSYS
ENTITY_ID	VARCHAR2	60	Foreign Key to external database.	PROGSYS
STATE	VARCHAR2	2	State Abbreviation.	PROGSYS
METERS	NUMBER	12.0	Length of event in meters.	PROGSYS
META_ID	VARCHAR2	18	Unique Metadata Identifier.	PROGSYS
FID	NUMBER	38	Manages the relationship between the business table and the feature table. Maintained by SDE and unique for the spatial column.	SDE

TEMP_TRANS				
Column Name	**Data Type**	**Width**	**Description**	**Source**
EVENT_ID	VARCHAR2	19	Unique event identifier.	PROGSYS
TRANS	VARCHAR2	1	Type of transaction for event (**A**dd, **D**elete, **M**odify).	PROGSYS
TTIME	VARCHAR2	14	Time of transaction.	PROGSYS

TEMP_METATRANS				
Column Name	**Data Type**	**Width**	**Description**	**Source**
META_ID	VARCHAR2	18	Unique metadata identifier.	PROGSYS
TRANS	VARCHAR2	1	Type of transaction for event (**A**dd, **D**elete, **M**odify).	PROGSYS
TTIME	VARCHAR2	14	Time of transaction.	PROGSYS

TEMP_METAID				
Column Name	**Data Type**	**Width**	**Description**	**Source**
META_ID	VARCHAR2	18	Unique metadata identifier.	PROGSYS

TEMP_RCHCODE				
Column Name	**Data Type**	**Width**	**Description**	**Source**
RCH_CODE	VARCHAR2	14	NHD linear reach code: a numeric code that uniquely identifies a reach. This 14 digit code has two parts: the first eight digits are the HUC for the CU in which the reach is located; the last six digits are a sequentially-ordered randomly assigned number.	PROGSYS

August 10, 2001

Appendix B

NHD RAD Index and Constraint Data Dictionary

The following table contains a list of the non-primary key constraints for all NHD RAD tables. The primary key constraints can be found in the individual table listings in Appendix A. The references for the Non-NHD event tables are specific only to those program systems that require them and not to all program systems. Note that these do not include the various indexes and constraints managed by SDE for the NHD RAD.

Table Name	**Constraint/Index Name**	**Type**	**Description**
RAD_*ps*_A	RAD_*ps*_A_ENT	index	index on entity_id
RAD_*ps*_A	RAD_*ps*_A_RCH	index	index on rch_code
RAD_*ps*_L	RAD_*ps*_L_ENT	index	index on entity_id
RAD_*ps*_L	RAD_*ps*_L_RCH	index	index on rch_code
RAD_*ps*_P	RAD_*ps*_P_ENT	index	index on entity_id
RAD_*ps*_P	RAD_*ps*_P_RCH	index	index on rch_code
RAD_NS_*ps*_A	RAD_NS_ps_A_ENT	index	index on entity_id
RAD_NS_*ps*_L	RAD_NS_ps_L_ENT	index	index on entity_id
RAD_NS_*ps*_P	RAD_NS_ps_P_ENT	index	index on entity_id
AREALM	RAD_AREALM_COM_ID	index	index on com_id
AREALM	RAD_AREALM_FCODE	index	index on fcode
AREARCH	RAD_AREARCH_COM_ID	index	index on com_id
AREARCH	RAD_AREARCH_RCH_CODE	index	index on rch_code
DRAIN	RAD_DRAIN_COM_ID	index	index on com_id
DRAIN	RAD_DRAIN_FCODE	index	index on fcode
DRAIN	RAD_DRAIN_RCH_COM_ID	index	index on rch_com_id
DUU2FEA	RAD_DUU2FEA_COM_ID	index	index on com_id
DUU2FEA	RAD_DUU2FEA_DUU_ID	index	index on duu_id
FCODE	RAD_FCODE_FCODE	index	index on fcode
LINEARLM	RAD_LINEARLM_COM_ID	index	index on com_id
LINEARLM	RAD_LINEARLM_FCODE	index	index on fcode
LINEARCH	RAD_LINEARRCH_COM_ID	index	index on com_id
LINEARRCH	RAD_LINEARRCH_RCH_CODE	index	index on rch_code
LINEARRCH	RAD_LINEARRCH_RCH_CODEDATE	index	index on rch_date

Table Name	Constraint/Index Name	Type	Description
NODE	RAD_NODE_ABOVE_ID	index	index on above_id
NODE	RAD_NODE_BELOW_ID	index	index on below_id
NODE	RAD_NODE_COM_ID	index	index on com_id
POINT	RAD_POINT_COM_ID	index	index on com_id
POINT	RAD_POINT_FCODE	index	index on fcode
RFLOW	RAD_RFLOW_COM_ID1	index	index on com_id_1
RFLOW	RAD_RFLOW_COM_ID2	index	index on com_id_2
WB	RAD_WB_COM_ID	index	index on com_id
WB	RAD_WB_FCODE	index	index on fcode
WB	RAD_WB_RCH_COM_ID	index	index on com_id
DRAIN	UK_DRAIN_DRAIN	unique	unique constraint on drain_
LINEARLM	UK_LINEARLM_LM	unique	unique constraint on lm_
LINEARRCH	UK_LINEARRCH_RCH	unique	unique constraint on rch_
AREARCH	UK_RCH_AREARCH	unique	unique constraint on rch_code
LINEARRCH	UK_RCH_LINEARRCH	unique	unique constraint on rch_code
AREALM	FK_AREALM_FCODE	foreign	foreign key constraint from fcode to fcode.fcode
DRAIN	FK_DRAIN_FCODE	foreign	foreign key constraint from fcode to fcode.fcode
DUU2FEA	FK_DUU2FEA_DUUDOM	foreign	foreign key constraint from duu_id to duudom.duu_id

Table Name	Constraint/Index Name	Type	Description
LINEARLM	FK_LINEARLM_FCODE	foreign	foreign key constraint from fcode to fcode.fcode
POINT	FK_POINT_FCODE	foreign	foreign key constraint from fcode to fcode.fcode
WB	FK_WB_FCODE	foreign	foreign key constraint from fcode to fcode.fcode
RAD_*ps*_L	FK_PT_*ps*_L_META_ID	foreign	foreign key constraint from meta_id to rad_*ps*_l_m.meta_id
RAD_*ps*_L	FK_PT_*ps*_L_DUU_ID	foreign	foreign key constraint from duu_id to duudom.duu_id
RAD_*ps*_L	FK_PT_*ps*_L_RCH_CODE	foreign	foreign key constraint from rch_code to linearrch.rch_code
RAD_*ps*_L	FK_PT_*ps*_L_STATE	foreign	foreign key constraint from state to states.state
RAD_*ps*_P	FK_PT_*ps*_P_META_ID	foreign	foreign key constraint from meta_id to rad_*ps*_p_m.meta_id
RAD_*ps*_P	FK_PT_*ps*_P_DUU_ID	foreign	foreign key constraint from duu_id to duudom.duu_id
RAD_*ps*_P	FK_PT_*ps*_P_RCH_CODE	foreign	foreign key constraint from rch_code to linearrch.rch_code
RAD_*ps*_P	FK_PT_*ps*_P_STATE	foreign	foreign key constraint from state to states.state
RAD_*ps*_A	FK_PT_*ps*_A_META_ID	foreign	foreign key constraint from meta_id to rad_*ps*_a_m.meta_id

Table Name	Constraint/Index Name	Type	Description
RAD_*ps*_A	FK_PT_*ps*_A_DUU_ID	foreign	foreign key constraint from duu_id to duudom.duu_id
RAD_*ps*_A	FK_PT_*ps*_A_RCH_CODE	foreign	foreign key constraint from rch_code to arearch.rch_code
RAD_*ps*_A	FK_PT_*ps*_A_STATE	foreign	foreign key constraint from state to states.state
RAD_NS_*ps*_L	FK_PT_NS_ps_L_STATE	foreign	foreign key constraint from state to states.state
RAD_NS_*ps*_L	FK_PT_NS_*ps*_L_META_ID	foreign	foreign key constraint from meta_id to rad_*ps*_l_m.meta_id
RAD_NS_*ps*_P	FK_PT_NS_ps_P_STATE	foreign	foreign key constraint from state to states.state
RAD_NS_*ps*_P	FK_PT_NS_*ps*_P_META_ID	foreign	foreign key constraint from meta_id to rad_*ps*_p_m.meta_id
RAD_NS_*ps*_A	FK_PT_NS_ps_A_STATE	foreign	foreign key constraint from state to states.state
RAD_NS_*ps*_A	FK_PT_NS_*ps*_A_META_ID	foreign	foreign key constraint from meta_id to rad_*ps*_a_m.meta_id
TEMP_LINE	FK_T_LINE_DUU_ID	foreign	foreign key constraint from duu_id to duudom.duu_id
TEMP_LINE	FK_T_LINE_RCH_CODE	foreign	foreign key constraint from rch_code to linearrch.rch_code
TEMP_LINE	FK_T_LINE_STATE	foreign	foreign key constraint from state to states.state

Table Name	Constraint/Index Name	Type	Description
TEMP_POINT	FK_T_POINT_DUU_ID	foreign	foreign key constraint from duu_id to duudom.duu_id
TEMP_POINT	FK_T_POINT_RCH_CODE	foreign	foreign key constraint from rch_code to linearrch.rch_code
TEMP_POINT	FK_T_POINT_STATE	foreign	foreign key constraint from state to states.state
TEMP_AREA	FK_T_AREA_DUU_ID	foreign	foreign key constraint from duu_id to duudom.duu_id
TEMP_AREA	FK_T_AREA_RCH_CODE	foreign	foreign key constraint from rch_code to arearch.rch_code
TEMP_AREA	FK_T_AREA_STATE	foreign	foreign key constraint from state to states.state
TEMP_NS_LINE	FK_T_NS_LINE_STATE	foreign	foreign key constraint from state to states.state
TEMP_NS_POINT	FK_T_NS_POINT_STATE	foreign	foreign key constraint from state to states.state
TEMP_NS_AREA	FK_T_NS_AREA_STATE	foreign	foreign key constraint from state to states.state
RAD_BEACH_L	FK_PT_BEACH_L_ENTITY_ID	foreign	foreign key constraint from entity_id to beach_info.entity_id
RAD_BEACH_P	FK_PT_BEACH_P_ENTITY_ID	foreign	foreign key constraint from entity_id to beach_info.entity_id
RAD_BEACH_A	FK_PT_BEACH_A_ENTITY_ID	foreign	foreign key constraint from entity_id to beach_info.entity_id