Hydat.mdb – Database Definition

STATIONS – **Stores information about a station, including identification, location and operation etc.**

Field Name	Key	Type	Size	Description (units)	Comments
STATION_NUMBER	y	text	7	Unique 7-character station identification	
STATION_NAME		text	80	Official name for station identification	
PROV_TERR_STATE_LOC		text	2	The province, territory or state in which the station is located	
REGIONAL_OFFICE_ID		text	1	The identifier of the regional office responsible for the station	Links to look-up table REGIONAL_OFFICE_LIST
HYD_STATUS		text	1	The status (either Active or Discontinued) of a hydrometric data collection program at a station	Links to look-up table STN_STATUS_CODES
SED_STATUS		text	1	The status (either Active or Discontinued) of a sediment data collection program at a station	Links to look-up table STN_STATUS_CODES
LATITUDE		single	4	North-South Coordinates of the gauging station in decimal degrees	
LONGITUDE		single	4	East-West Coordinates of the gauging station in decimal degrees	
DRAINAGE_AREA_GROSS		single	4	The total surface area that drains to the gauge site (km^2)	
DRAINAGE_AREA_EFFECT		single	4	The portion of the drainage basin that contributes runoff to the gauge site, calculated by subtracting any non-contributing portion from the gross drainage area (km^2)	
RHBN		yes/no	1	Reference Hydrometric Basin Network station	
REAL_TIME		yes/no	1	Indicates if a station has the capacity to deliver data in real-time or near real-time	
CONTRIBUTOR_ID		integer	2	Unique ID of an agency that contributes data to the HYDAT database. The agency is non-WSC and non WSC funded	Links to look-up table AGENCY_LIST
OPERATOR_ID		integer	2	Unique ID of an agency that operates a hydrometric station	Links to look-up table AGENCY_LIST
DATUM_ID		integer	2	Unique ID for a datum	Links to look-up table DATUM_LIST

STN_REMARKS – Provides descriptive remarks about particular occurrences at a station and is documented under standard headings

Field Name	Key	Type	Size	Description (units)	Comments
STATION_NUMBER	y	text	7	Unique 7-character station identification	
REMARK_TYPE_CODE	y	byte	1	An internal ID which categorizes a remark	Links to look-up table STN_REMARK_CODES
YEAR	y	integer	2	Year to which a remark applies	For historical comments: Year = dummy value
REMARK_EN		Memo	*	Textual information, in English, for a given remark type	
REMARK_FR		Memo	*	Textual information, in French, for a given remark type	

STN_DATA_RANGE – Provides a historical summary of data

Field Name	Key	Type	Size	Description (units)	Comments
STATION_NUMBER	y	text	7	Unique 7-character station identification	
DATA_TYPE	y	text	1	Code for the type of data	Links to look-up table DATA_TYPES
SED_DATA_TYPE	y	text	2	Code for the type of instantaneous sediment data	Links to look-up table SED_DATA_TYPES
YEAR_FROM		integer	2	The first year of the DATA_TYPE collection	
YEAR_TO		integer	2	The last year of the DATA_TYPE collection	
RECORD_LENGTH		byte	1	Number of years of data available in the HYDAT database	Could be less than YEAR_TO minus YEAR_FROM

STN_REGULATION – Contains information to identify whether modifications to a flow regime of a drainage system affect data produced at a hydrometric station and the duration of such affects

Field Name	Key	Type	Size	Description (units)	Comments
STATION_NUMBER	y	text	7	Unique 7-character station identification	
YEAR_FROM	y	integer	2	Year the flow regulation started	
YEAR_TO		integer	2	Year the flow regulation ended	
REGULATED		yes/no	1	A flag indicating whether the flow is regulated or not ('no' for Natural and 'yes' for regulated)	

STN_DATA_COLLECTION – Contains current and historical information about the hydrometric or sediment data collection programs

Field Name	Key	Type	Size	Description (units)	Comments
STATION_NUMBER	y	text	7	Unique 7-character station identification	
DATA_TYPE	y	text	1	Code for the type of data	Links to look-up table DATA_TYPES
YEAR_FROM	y	integer	2	The beginning year of a period when data is collected for a station's hydrometric program or for a station's sediment program	
YEAR_TO		integer	2	The ending year of a period when data is collected for a station's hydrometric program. This information is not applicable for sediment stations	
MEASUREMENT_CODE		text	1	Either 1) the sampling method used in the collection of sediment data or 2) the type of the gauge used in the collection of the hydrometric data	Links to look-up table MEASUREMENT_CODES
OPERATION_CODE		text	1	A code representing the schedule of station operation for the collection of sediment or hydrometric data	Links to look-up table OPERATION_CODES

ANNUAL_INSTANT_PEAKS – Annual maximum/minimum instantaneous flows and water levels (Measured in Field)

Field Name	Key	Type	Size	Description (units)	Comments
STATION_NUMBER	y	text	7	Unique 7-character station identification	
DATA_TYPE	y	text	1	Code for the type of data	Links to look-up table DATA_TYPES
YEAR	y	integer	2	Year of occurrence	
PEAK_CODE	y	text	1	Type of peak value	Links to look-up table PEAK_CODES
PRECISION_CODE		byte	1	Precision of water level measurement	Links to look-up table PRECISION_CODES
MONTH		byte	1	The month of occurrence	
DAY		byte	1	The day of occurrence	
HOUR		byte	1	The hour of occurrence	
MINUTE		byte	1	The minute of occurrence	
TIME_ZONE		text	4	Time zone of the station location	
PEAK		single	4	Flow or water level value (Units are dependent on DATA_TYPE)	
SYMBOL		text	1	Indicates a condition where the daily mean has a larger than expected error	Links to look-up table DATA_SYMBOLS

ANNUAL_STATISTICS – Annual statistics (minimum/maximum/mean) derived from daily values

Field Name	Key	Type	Size	Description (units)	Comments
STATION_NUMBER	y	text	7	Unique 7-character station identification	
DATA_TYPE	y	text	1	Code for the type of data	Links to look-up table DATA_TYPES
YEAR	y	integer	2	Year of daily value	
MEAN		single	4	Annual mean value, derived from daily values	
MIN_MONTH		byte	1	Month in which minimum occurred	
MIN_DAY		byte	1	Day on which minimum occurred	
MIN		single	4	Annual minimum daily mean	
MIN_SYMBOL		text	1	Indicates a condition when minimum occurred	Links to look-up table DATA_SYMBOLS
MAX_MONTH		byte	1	Month in which maximum occurred, e.g., 10 for October	
MAX_DAY		byte	1	Day on which maximum occurred	
MAX		single	4	Annual maximum daily mean	
MAX_SYMBOL		text	1	Indicates a condition when maximum occurred	Links to look-up table DATA_SYMBOLS

DLY_FLOWS – Daily flow values

Field Name	Key	Type	Size	Description (units)	Comments
STATION_NUMBER	y	text	7	Unique 7-character station identification	
YEAR	y	integer	2	Year for the daily flow values	
MONTH	y	byte	1	Month for daily flow values	
FULL_MONTH		yes/no	1	Flags whether the data exist for every day of the month	
NO_DAYS		byte	1	Number of days in this month	
MONTHLY_MEAN		single	4	Average of the daily flow data for a month that has complete data	
MONTHLY_TOTAL		single	4	Total of the daily flow values for each month that has complete data	
FIRST_DAY_MIN		byte	1	Day on which the minimum daily flow first occurred	
MIN		single	4	Minimum daily flow during month (m^3/sec)	
FIRST_DAY_MAX		byte	1	Day on which the maximum daily flow first occurred	
MAX		single	4	Maximum daily flow during month (m^3/sec)	
FLOW1		single	4	Daily flow value (m^3/s)	
FLOW_SYMBOL1		text	1	Indicates a condition where the daily mean has a larger than expected error	Links to look-up table DATA_SYMBOLS
…				Flow, Symbol (for 31 days)	

DLY_LEVELS – Daily water level values

Field Name	Key	Type	Size	Description (units)	Comments
STATION_NUMBER	y	Text	7	Unique 7-character station identification	
YEAR	y	Integer	2	Year for daily water level values	
MONTH	y	Byte	1	Month for daily water level values	
PRECISION_CODE		Byte	1	Precision of water level measurement	Links to look-up table PRECISION_CODES
FULL_MONTH		yes/no	1	Flags whether the data exist for every day of the month	
NO_DAYS		Byte	1	Number of days in this month	
MONTHLY_MEAN		Single	4	Average of the daily water level data for a month that has complete data	
MONTHLY_TOTAL		Single	4	Total of the daily water level values for each month that has complete data	
FIRST_DAY_MIN		Byte	1	Day on which the minimum daily level first occurred	
MIN		Single	4	Minimum daily water level during month (m)	
FIRST_DAY_MAX		Byte	1	Day on which the maximum daily level first occurred	
MAX		Single	4	Maximum daily water level during month (m)	
LEVEL1		Single	4	Daily water level value (m)	
LEVEL_SYMBOL1		Text	1	Indicates a condition where the daily mean has a larger than expected error	Links to look-up table DATA_SYMBOLS
…				Level, Symbol (for 31 days)	

SED_DLY_SUSCON – Daily suspended sediment concentration values

Field Name	Key	Type	Size	Description (units)	Comments
STATION_NUMBER	y	text	7	Unique 7-character station identification	
YEAR	y	integer	2	Year of daily value	
MONTH	y	byte	1	Month of daily value	
FULL_MONTH		yes/no	1	Flags whether the data exist for every day of the month	
NO_DAYS		byte	1	Number of days in this month	
MONTHLY_TOTAL		single	4	Total of the daily suspended sediment concentration values for each month that has complete data	
FIRST_DAY_MIN		byte	1	Day on which the minimum daily concentration first occurred	
MIN		single	4	Minimum daily concentration during month (mg/l)	
FIRST_DAY_MAX		byte	1	Day on which the maximum daily concentration first occurred	
MAX		single	4	Maximum daily concentration during month (mg/l)	
SUSCON1		single	4	Daily suspended sediment concentration value (mg/l)	
SUSCON_SYMBOL1		text	1	Describes whether the SUSCON value is based on an estimate or a sample	Links to look-up table DATA_SYMBOLS
…				Concentration, Symbol (for 31 days)	

SED_DLY_LOADS – Daily suspended sediment loads in tonnes calculated by SED_DLY_SUSCON * DLY_FLOWS * Constant

Field Name	Key	Type	Size	Description (units)	Comments
STATION_NUMBER	y	text	7	Unique 7-character station identification	
YEAR	y	integer	2	Year of daily load value	
MONTH	y	byte	1	Month of daily load value	
FULL_MONTH		yes/no	1	Flags whether the data exist for every day of the month	
NO_DAYS		byte	1	Number of days in this month	
MONTHLY_MEAN		single	4	The average of the daily sediment loads for a month (tonnes)	
MONTHLY_TOTAL		single	4	Total of the daily sediment load values during this month (tonnes)	
FIRST_DAY_MIN		byte	1	Day on which the minimum daily load first occurred	
MIN		single	4	Minimum daily sediment load value during the month (tonnes)	
FIRST_DAY_MAX		byte	1	Day on which the maximum daily load first occurred	
MAX		single	4	Maximum daily sediment load value during the month (tonnes)	
LOAD1		single	4	Daily amount of sediment transported (tonnes)	
…				Load (for 31 days)	

SED_SAMPLES – Instantaneous sediment samples data

Field Name	Key	Type	Size	Description (units)	Comments
STATION_NUMBER	y	text	7	Unique 7-character station identification	
SED_DATA_TYPE	y	text	2	Contains the type of sampling method used in collecting sediment for a station	Links to look-up table SED_DATA_TYPES
DATE	y	date	8	Contains the time to the nearest minute of when the sample was taken	
SAMPLE_REMARK_CODE		text	1	Remark code that indicates the condition or nature of the sample taken	Links to look-up table SAMPLE_REMARK_CODES
TIME_SYMBOL		text	1	An "E" symbol means the time is an estimate only	
FLOW		single	4	Contains the instantaneous discharge in cubic metres per second at the time the sample was taken	
FLOW_SYMBOL		text	1	Indicates a condition where the daily mean has a larger than expected error	Links to look-up table DATA_SYMBOLS
SAMPLER_TYPE		text	5	Contains the type of measurement device used to take the sample	
SAMPLING_VERTICAL_LOCATION		text	4	The location on the cross-section of the river at which the single sediment samples are collected. If one of the standard locations is not used the distance in meters will be shown	Links to look-up table SED_VERTICAL_LOCATION

Field Name	Key	Type	Size	Description (units)	Comments
SAMPLING_VERTICAL_SYMBOL		text	1	Indicates sample location relative to the regular measurement cross-section or the regular sampling site	Links to look-up table SED_VERTICAL_SYMBOLS
TEMPERATURE		single	4	Contains the instantaneous water temperature in Celsius at the time the sample was taken	
CONCENTRATION		single	4	Contains the instantaneous concentration sampled in milligrams per litre	
CONCENTRATION_SYMBOL		text	1	General comment codes about the sample or the sampling process	Links to look-up table CONCENTRATION_SYMBOLS
DISSOLVED_SOLIDS		single	4	Contains the instantaneous dissolved solids sampled (mg/L)	
SAMPLE_DEPTH		single	4	Contains the water depth in metres where the sample was taken	
STREAMBED		text	2	"SB" indicates streambed record	
SV_DEPTH1		single	4	Depth 1 for split vertical depth integrating (m)	
SV_DEPTH2		single	4	Depth 2 for split vertical depth integrating (m)	

SED_SAMPLES_PSD – Particle size distribution analysis of samples in SED_SAMPLES table

Field Name	Key	Type	Size	Description (units)	Comments
STATION_NUMBER	y	text	7	Unique 7-character station identification	
SED_DATA_TYPE	y	text	2	Contains the type of sediment data that is collected for a station	Links to look-up table SED_DATA_TYPES
DATE	y	date	8	Contains the date and time to the nearest minute of when the sample was taken	
PARTICLE_SIZE	y	single	4	Particle size (mm)	
PERCENT		byte	1	Contains the percentage values for indicated particle sizes for samples collected	

STN_DATUM_CONVERSION – Contains factors used to convert the water levels referred to one datum to another datum

Field Name	Key	Type	Size	Description (units)	Comments
STATION_NUMBER	y	text	7	Unique 7-character station identification	
DATUM_ID_FROM	y	integer	2	The code identifying a datum from which water level is being converted	Links to look-up table DATUM_LIST
DATUM_ID_TO	y	integer	2	The code identifying a datum to which water level is being converted	Links to look-up table DATUM_LIST
CONVERSION_FACTOR		single	4	The conversion factor applied to water levels referred to one datum to obtain water levels referred to another datum	

STN_DATUM_UNRELATED – Contains the history of the information on the gauge datum

Field Name	Key	Type	Size	Description (units)	Comments
STATION_NUMBER	y	text	7	Unique 7-character station identification	
DATUM_ID	y	integer	2	Unique code identifying a datum	Links to look-up table DATUM_LIST
YEAR_FROM		date	8	The first year of use	
YEAR_TO		date	8	The last year of use	

STN_OPERATION_SCHEDULE – Historical station operation schedule

Field Name	Key	Type	Size	Description (units)	Comments
STATION_NUMBER	y	text	7	Unique 7-character station identification	
DATA_TYPE	y	text	1	Code for type of data	Links to look-up table DATA_TYPES
YEAR	y	integer	2	Year of operation schedule	
MONTH_FROM		text	3	Station operation start month	
MONTH_TO		text	3	Station operation end month	

DATUM_LIST – DATUM look-up Table

Field Name	Key	Type	Size	Description (units)	Comments
DATUM_ID	y	integer	2	DATUM identifier	
DATUM_EN		text	80	Descriptive Datum Name (English)	
DATUM_FR		text	80	Descriptive Datum Name (French)	

AGENCY_LIST – AGENCY look-up Table

Field Name	Key	Type	Size	Description (units)	Comments
AGENCY_ID	y	Integer	2	Agencies identifier	
AGENCY_EN		text	80	Name of the Agency (English)	
AGENCY_FR		text	80	Name of the Agency (French)	

REGIONAL_OFFICE_LIST – REGIONAL_OFFICE look-up Table

Field Name	Key	Type	Size	Description (units)	Comments
REGIONAL_OFFICE_ID	y	byte	1	Region ID	
REGIONAL_OFFICE_NAME_EN		text	20	Region Name (English)	
REGIONAL_OFFICE_NAME_FR		text	20	Region Name (French)	

STN_REMARK_CODES – REMARK_TYPE look-up Table (Linked with STN_REMARKS)

Field Name	Key	Type	Size	Description (units)	Comments
REMARK_TYPE_CODE	y	byte	1	REMARK_TYPE identifier	
REMARK_TYPE_EN		text	50	Descriptive REMARK_TYPE (English)	
REMARK_TYPE_FR		text	50	Descriptive REMARK_TYPE (French)	

SAMPLE_REMARK_CODES – SEDIMENT_SAMPLE_REMARK look-up Table (Linked with SED_SAMPLES)

Field Name	Key	Type	Size	Description (units)	Comments
SAMPLE_REMARK_CODE	y	byte	1	Sediment Sample Remark identifier	
SAMPLE_REMARK_EN		text	90	Descriptive Sediment Sample Remark (English)	
SAMPLE_REMARK_FR		text	90	Descriptive Sediment Sample Remark (French)	

DATA_TYPES – DATA_TYPE look-up Table

Field Name	Key	Type	Size	Description (units)	Comments
DATA_TYPE	y	text	1	Data type code	
DATA_TYPE_EN		text	50	Descriptive Data Type (English)	
DATA_TYPE_FR		text	50	Descriptive Data Type (French)	

SED_DATA_TYPES – INSTANT SEDIMENT DATA TYPE look-up table (Linked with SED_SAMPLES and SED_SAMPLES_PSD)

Field Name	Key	Type	Size	Description (units)	Comments
SED_DATA_TYPE	y	text	2	Instant Sediment Data Type identifier	
SED_DATA_TYPE_EN		text	60	Descriptive Instant Sediment Data Type (English)	
SED_DATA_TYPE_FR		text	60	Descriptive Instant Sediment Data Type (French)	

OPERATION_CODES – STATION'S OPERATION SCHEDULE look-up table

Field Name	Key	Type	Size	Description (units)	Comments
OPERATION_CODE	y	text	1	Station's Operation Schedule identifier	
OPERATION_EN		text	20	Descriptive Station's Operation Schedule (English)	
OPERATION_FR		text	20	Descriptive Station's Operation Schedule (French)	

MEASUREMENT_CODES – MEASUREMENT METHOD look-up table (linked with STN_DATA_COLLECTION)

Field Name	Key	Type	Size	Description (units)	Comments
MEASUREMENT_CODE	y	text	1	Measurement Method identifier	
MEASUREMENT_EN		text	50	Descriptive Measurement Method (English)	
MEASUREMENT_FR		text	50	Descriptive Measurement Method (French)	

PRECISION_CODES – LEVEL'S PRECISION CODE look-up table

Field Name	Key	Type	Size	Description (units)	Comments
PRECISION_CODE	y	byte	1	Precision identifier	
PRECISION_EN		text	40	Descriptive Precision (English)	
PRECISION_FR		text	40	Descriptive Precision (French)	

STN_STATUS_CODES – STATION STATUS CODE look-up table

Field Name	Key	Type	Size	Description (units)	Comments
STATUS_CODE	y	text	1	Station Status Symbol	
STATUS_EN		text	20	Descriptive Station Status (English)	
STATUS_FR		text	20	Descriptive Station Status(French)	

PEAK_CODES – INSTANT PEAK CODE look-up table

Field Name	Key	Type	Size	Description (units)	Comments
PEAK_CODE	y	text	1	Peak Code identifier	
PEAK_EN		text	20	Descriptive Peak Code (English)	
PEAK_FR		text	20	Descriptive Peak Code (French)	

DATA_SYMBOLS – DATA SYMBOLS look-up table

Field Name	Key	Type	Size	Description (units)	Comments
SYMBOL_ID	y	text	1	Symbol code	
SYMBOL_EN		text	50	Description of Symbol (English)	
SYMBOL_FR		text	50	Description of Symbol (French)	

SED_VERTICAL_SYMBOLS – INSTANT SEDIMENT SAMPLING VERTICAL SYMBOL look-up table

Field Name	Key	Type	Size	Description (units)	Comments
SAMPLING_VERTICAL_SYMBOL	y	text	1	Instant Sediment Sampling Vertical Symbol for the location of vertical profile sampled	
SAMPLING_VERTICAL_EN		text	125	Descriptive Sampling Vertical Symbol (English)	
SAMPLING_VERTICAL_FR		text	125	Descriptive Sampling Vertical Symbol (French)	

SED_VERTICAL_LOCATION – INSTANT SEDIMENT SAMPLING VERTICAL LOCATION look-up table

Field Name	Key	Type	Size	Description (units)	Comments
SAMPLING_VERTICAL_LOCATION_ID	y	text	4	Instant Sediment Sampling Vertical Location identifier	
SAMPLING_VERTICAL_LOCATION_EN		text	60	Descriptive Sampling Vertical Location (English)	
SAMPLING_VERTICAL_LOCATION_FR		text	60	Descriptive Sampling Vertical Location (French)	

CONCENTRATION_SYMBOLS – CONCENTRATION SYMBOL look-up table

Field Name	Key	Type	Size	Description (units)	Comments
CONCENTRATION_SYMBOL	y	text	1	General comment symbol about the sediment sample or the sampling process	
CONCENTRATION_EN		text	60	Description of Concentration Sample (English)	
CONCENTRATION_FR		text	60	Description of Concentration Sample (French)	

Version – Version information of HYDAT database

Field Name	Key	Type	Size	Description - valid values/units	Comments
VERSION		text	15	Version of database	
DATE		Date/time	8	Date of database generation	