

*State of Michigan*

*Department of Natural Resources and Environment (DNRE)*

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# *Wellogic System*

## XML Schema User's Guide and Data Dictionary

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Revised 11/1/2010



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# Contents

Version Control .....	iii
Overview .....	1
Submission Types.....	1
Schema Changes from Previous Version .....	2
Business Rules.....	3
Water Well and Pump Record Business Rules.....	<b>Error! Bookmark not defined.</b>
Abandoned Well Plugging Record Business Rules.....	<b>Error! Bookmark not defined.</b>
Appendix A – XML Data Dictionary and Crosswalk.....	4
Water Well and Pump Record Schema.....	4
Abandoned Water Well Plugging Record Schema .....	16

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## Version Control

Version	Author	Date
1.0	Windsor Solutions, Inc.	2/17/2010
1.1	Windsor Solutions, Inc.	3/19/2010
1.2	DNRE	3/31/2010
1.3	Windsor Solutions, Inc.	4/1/2010
1.4	Windsor Solutions, Inc. - Added ElevationAccuracyMeasureUnit element to Coordinate block of both XML schemas.	5/20/2010
1.5	Windsor Solutions, Inc. <ul style="list-style-type: none"><li>- Final release for production system</li><li>- Updated business rules, now located in Appendix A</li></ul>	11/1/2010

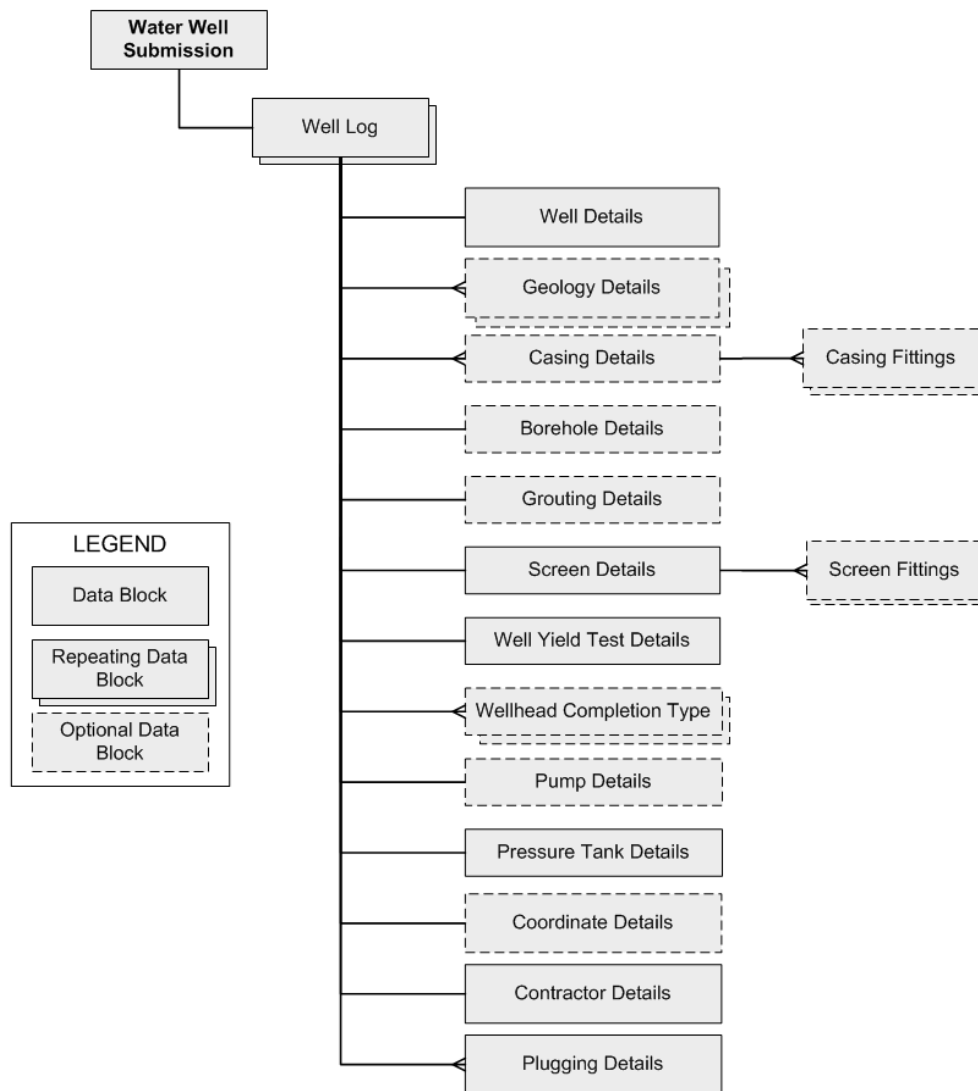
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# Overview

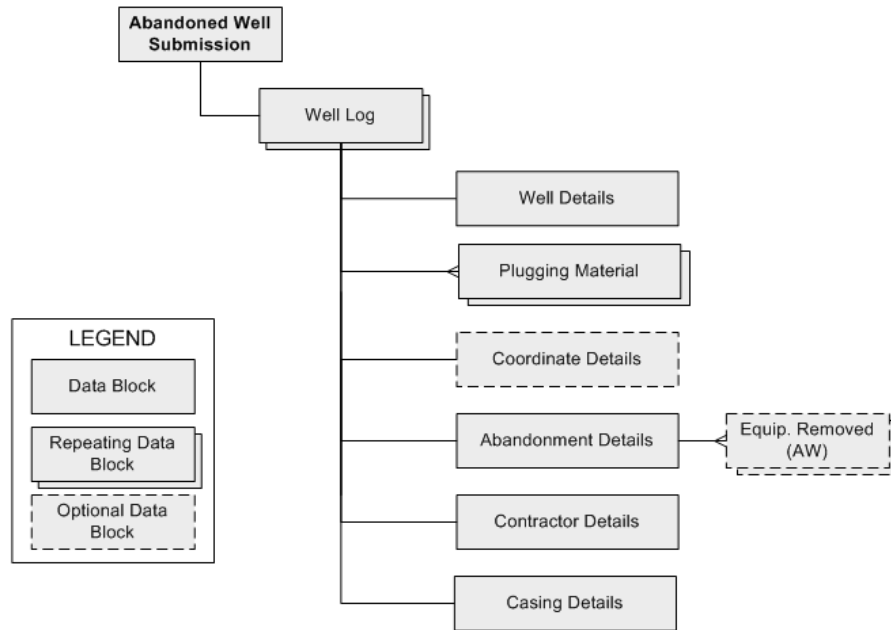
Wellogic System users can upload XML files as an alternative to performing direct data entry. This document provides users with information on the structure of the XML schema, the business rules for submitting well record data via XML, and a cross reference between the previous and current versions of the XML schema for Water Well and Pump Records.

## Submission Types

Wellogic now supports XML submission of both Water Well and Pump Records and Abandoned Well Plugging Records. Each submission file may contain one type of record. Separate XML schemas are available for each submission type.



*Water Well and Pump Record XML Schema Structure*



*Abandoned Well Plugging Record XML Schema Structure*

## Schema Changes from Previous Version

The previous version of the Wellogic XML schema cannot be used in the new Wellogic system. While the schema is new, the data points are very similar between the old and new systems. The more notable changes are listed below. For a complete list of changes, see Appendix A.

- Numerous changes to lookup table values, principally in the latitude/longitude metadata. Implementers are encouraged to obtain a recent list of the Wellogic lookup tables and ensure that codes used in XML are valid. The lookup values are not enforced in the schema. This gives DNRE flexibility to edit lookup tables without requiring a new version of the schema to be released with matching changes. While the schema does not require valid correct lookup values, Wellogic will validate these as part of the XML upload process and will reject the submission if invalid lookup values are present.
- The new Water Well and Pump Record format allows for three different types of grouting materials to be supplied. The old schema only allowed for one grouting material and additive to be provided.
- The new Water Well and Pump Record format allows for three different screens to be listed, each at different lengths and depths. The old schema only supported information about one screen to be provided.
- The new schema supports several new, optional data elements such as the latitude/longitude of an abandoned well, the voltage of an installed pump, and the registration number of a Large Quantity Well contractor.
- XML support has been added for Abandoned Well Plugging Records.



## Business Rules

- XML Submissions can only be performed for submitting new well records. You cannot edit or delete an existing well record using the Wellogic XML upload function.
- Well records submitted via XML that are identified as a duplicate of an existing record will not be added to the Wellogic database. The submission processing summary will identify the well record(s) that were duplicates. Duplicates are identified by an exact string match on the following fields:

Well Street Address, Well City, Township, Section, Well Depth, Completion Date, Owner Name, Well Use Type, Well Type, Contractor Registration Number, and for water wells only, Pump Installation Only Indicator.

Comparisons are also performed on blank (null) fields.

- Business rules are significantly stricter for Contractors than for other user types.
- Business rules are not enforced with XML schema validation. Files must be submitted to Wellogic to be fully tested against the business rules described in this section.
- Fields that use lookup values (pick lists) have the added option of Unknown for all non-contractor users.
- If “Other” is selected for any lookup (code “OTH”), a description must be added for the item in the corresponding text field. For example, if WellTypeID is set to “OTH”, a value must be supplied for WellTypeText.

The business rules for specific fields are included in the Appendix A below.

# Appendix A – XML Data Dictionary, Crosswalk, and Business Rules

## Water Well and Pump Record Schema

Element Name	Schema Occurs	Description	Business Rules	Legacy Element Name
WaterWellSubmission	1	The root element for Water Well submissions to Wellog		welldata
WellLog	1-n	An instance of a Water Well and Pump Record		welldata\wellog
WellDetails	1	The well location, type, use, and related information.		welldata\wellog\welldetails
PermitNumber	0-1	The well construction permit number.		welldata\wellog\welldetails\permitno
TaxNumber	0-1	The tax number assigned to the property.		welldata\wellog\welldetails\taxno
WellLocationDetails	1			n/a
CountyID	1	The county where the well is located. References the County lookup table in Wellog.	Required.	welldata\wellog\welldetails\county
TownshipID	1	The township where the well is located. References the Township lookup table in Wellog.	Required. Must be within County selected.	welldata\wellog\welldetails\township
TownRangeID	1	The town/range where the well is located. References the TownRange lookup table in Wellog.	Required. Must be within Township selected.	welldata\wellog\welldetails\townrange
SectionNumber	1	The section where the well is located. Must be between 1 and 36.	Required. Must be between 1 and 36.	welldata\wellog\welldetails\sectionno
WellAddressDetails	1			n/a
WellDistanceDirectionText	0-1	Where the well is located in relation to a road intersection	Required for Contractors.	welldata\wellog\welldetails\distdirroad
WellStreetAddress	0-1	The street address of the well.		welldata\wellog\welldetails\welladdress
WellCityName	0-1	The city where the well is located.	Required for Contractors.	welldata\wellog\welldetails\wellcity
WellStateID	1	The two-character state code where the well is located. Use CN for Canada.	Required.	welldata\wellog\welldetails\wellstate
WellZipCode	0-1	The well zip code		welldata\wellog\welldetails\wellzip + wellzip4
WellOwnerDetails	0-1			n/a
WellOwnerFullName	0-1	The well owner's full name.	Required for Contractors.	welldata\wellog\welldetails\ownname
WellOwnerAddressSameAsWe	1	Indicates that the well owner's address is the	Required.	welldata\wellog\welldetails\ownsameswell

Indicator		same as the well address.		
WellOwnerStreetAddress	0-1	The well owner's street address.	Required for Contractors.	welldata\wellog\welldetails\ownaddress
WellOwnerCityName	0-1	The well owner's city of residence.	Required for Contractors.	welldata\wellog\welldetails\owncity
WellOwnerStateID	0-1	The two-character state code for the well owner's address. Use CN for Canada.		welldata\wellog\welldetails\ownstate
WellOwnerZipCode	0-1	The well owner's zip code.	Required for Contractors.	welldata\wellog\welldetails\ownzip + ownzip4
WellUseTypeID	1	The use of the well. Must be a value from the RefWellUseType table in Wellogic.	Required.	welldata\wellog\welldetails\welluse
WellUseText	0-1	A text description of the Well Use if "OTHER" is selected for the Well Use Type ID.		welldata\wellog\welldetails\welluser
WellStatusTypeID	1	The status of the well. Must be a value from the RefWellStatusType table in Wellogic.	Required.	welldata\wellog\welldetails\wellstatus
WellStatusText	0-1	A text description of the Well Status if "OTHER" is selected for the Well Status Type ID.		welldata\wellog\welldetails\wellstatusr
WellDepthFeet	0-1	The depth of the well in feet.	Required for Contractors.	welldata\wellog\welldetails\welldepth
WellTypeID	1	The Well Record type, such as New or Replacement. Must be a value from the RefWellType table in Wellogic.	Required.	welldata\wellog\welldetails\welltype
WSSN	0-1	The water supply serial number assigned to a Type I or II well.		welldata\wellog\welldetails\wssn
SourceIDOrWellNumber	0-1	The well number assigned to a type I or II well.		welldata\wellog\welldetails\wellname
DrillingMethodTypeID	1	Must be a value from the RefDrillingMethodType table in Wellogic.	Required when Pump Installation Only is not "Y"	welldata\wellog\welldetails\drillingmthd
DrillingMethodText	0-1	A text description of the Drilling Method if "OTHER" is selected for the Drilling Method Type ID.		welldata\wellog\welldetails\drillingmthdr
CompletedDate	0-1	The date the well construction was completed.	Required for Contractors. Can't be future date.	welldata\wellog\welldetails\datewellcompleted
WellText	0-1	General remarks for the Water Well record.		welldata\wellog\welldetails\wellr
GeologyText	0-1	General remarks about the geology of a Water Well record.		welldata\wellog\geologydetails\geologycomments
UserSuppliedWellLogID	1	The user supplied ID for a record uploaded via XML.		welldata\wellog\welldetails\wellkey
<b>GeologyDetails</b>	<b>0-n</b>	<b>The geology stratum information for the well.</b>		<b>welldata\wellog\geologydetails</b>
SequenceNumber	1	The sequence number of the formation as it appears on the form.		n\a
PrimaryColorTypeID	0-1	Must be a value from the RefPrimaryColorType table in Wellogic.		welldata\wellog\geologydetails\primarycolor
PrimaryMaterialTypeID	1	Must be a value from the RefPrimaryMaterialType table in Wellogic.	Required.	welldata\wellog\geologydetails\primarymaterial

SecondaryMaterialTypeID	0-1	Must be a value from the RefSecondaryMaterialType table in Wellog.		welldata\wellog\geologydetails\descripsecondary
FormationTypeID	0-1	Must be a value from the RefFormationType table in Wellog.		welldata\wellog\geologydetails\descripformation
StratumDepthFeet	0-1	The depth to bottom of the formation.	Required for Contractors. Largest supplied stratum depth must be greater than or equal to the well depth, if supplied.	welldata\wellog\geologydetails\stratumdepth
<b>CasingDetails</b>	<b>0-1</b>	<b>Information about the well casing.</b>		<b>welldata\wellog\wellfeatures\casing</b>
CasingTypeID	0-1	Must be a value from the RefCasingrType table in Wellog.	Required when Pump Installation Only is not "Y"	welldata\wellog\wellfeatures\casing\casingtype
CastingTypeText	0-1	A text description of the Well Use if "OTHER" is selected for the Casing Type ID.		welldata\wellog\wellfeatures\casing\casingtyper
CasingDiameterInches1	0-1	The casing diameter of the well.		welldata\wellog\wellfeatures\casing\casingdia1
CasingDiameterInches2	0-1	The second casing diameter of the well.		welldata\wellog\wellfeatures\casing\casingdia2
CasingDiameterInches3	0-1	The third casing diameter of the well.		welldata\wellog\wellfeatures\casing\casingdia3
CasingDepthFeet1	0-1	The first casing depth of the well.		welldata\wellog\wellfeatures\casing\casingdepth1
CasingDepthFeet2	0-1	The second casing depth of the well.		welldata\wellog\wellfeatures\casing\casingdepth2
CasingDepthFeet3	0-1	The third casing depth of the well.		welldata\wellog\wellfeatures\casing\casingdepth3
CasingSDR1	0-1	The thickness measurement of the first plastic casing.		n\a
CasingSDR2	0-1	The thickness measurement of the second plastic casing.		n\a
CasingSDR3	0-1	The thickness measurement of the third plastic casing.		n\a
CasingJointTypeID	0-1	Must be a value from the RefCasingJointType table in Wellog.		welldata\wellog\wellfeatures\casing\casingjoint
CasingJointText	0-1	A text description of the Well Use if "OTHER" is selected for the Casing Joint Type ID.		welldata\wellog\wellfeatures\casing\casingjointr
CasingHeightFeet	0-1	The casing height above or below the surface. Used negative numbers for below grade.		welldata\wellog\wellfeatures\casing\casingheight
CasingFittingTypeID	0-n	Must be a value from the RefCasingFittingType table in Wellog.		welldata\wellog\wellfeatures\casing\casingfittings\casingfittingsvalue
CasingFittingText	0-1	A text description of the Well Use if "OTHER" is selected for the Casing Fitting Type ID.		welldata\wellog\wellfeatures\casing\casingfittingsr
<b>BoreholeDetails</b>	<b>0-1</b>	<b>Information about the borehole.</b>		<b>welldata\wellog\wellfeatures\borehole</b>
BoreholeDiameterInches1	0-1	The diameter of the first borehole.		welldata\wellog\wellfeatures\borehole\boreholedia1
BoreholeDiameterInches2	0-1	The diameter of the second borehole.		welldata\wellog\wellfeatures\borehole\boreholedia2

				ia2
BoreholeDiameterInches3	0-1	The diameter of the third borehole.		welldata\wellog\wellfeatures\borehole\boreholedia3
BoreholeDepthFeet1	0-1	The depth of the first borehole.		welldata\wellog\wellfeatures\borehole\boreholedeph1
BoreholeDepthFeet2	0-1	The depth of the second borehole.		welldata\wellog\wellfeatures\borehole\boreholedeph2
BoreholeDepthFeet3	0-1	The depth of the third borehole.		welldata\wellog\wellfeatures\borehole\boreholedeph3
<b>GroutingDetails</b>	<b>0-1</b>	<b>Information about the well grouting.</b>		<b>welldata\wellog\wellfeatures\grouting</b>
WellGroutedIndicator	0-1	Indicates whether or not the well was grouted. Must be Y or N.	Required when Pump Installation Only is not "Y"	welldata\wellog\wellfeatures\grouting\wellgrouted
GroutingMethodTypeID	0-1	Must be a value from the RefGroutingMethodType table in Wellog.	Required if Well Grouted = Yes AND Well Type is not (Deepening, Dry Hole, or Boring no casing) AND Pump Installation Only is not "Y"	welldata\wellog\wellfeatures\grouting\groutingmethod
GroutingMethodText	0-1	A text description of the Well Use if "OTHER" is selected for the Grouting Method Type ID.		welldata\wellog\wellfeatures\grouting\groutingmethodr
GroutingMaterialTypeID1	0-1	Must be a value from the RefGroutingMaterialType table in Wellog.	Required if Well Grouted = Yes AND Well Type is not (Deepening, Dry Hole, or Boring no casing) AND Pump Installation Only is not "Y"	welldata\wellog\wellfeatures\grouting\groutingmaterial1
GroutingMaterialTypeID2	0-1	Must be a value from the RefGroutingMaterialType table in Wellog.		welldata\wellog\wellfeatures\grouting\groutingmaterial2
GroutingMaterialTypeID3	0-1	Must be a value from the RefGroutingMaterialType table in Wellog.		welldata\wellog\wellfeatures\grouting\groutingmaterial3
GroutingMaterialText1	0-1	A text description of the Well Use if "OTHER" is selected for the Grouting Material Type ID 1.		welldata\wellog\wellfeatures\grouting\groutingmaterial1r
GroutingMaterialText2	0-1	A text description of the Well Use if "OTHER" is selected for the Grouting Material Type ID 2.		welldata\wellog\wellfeatures\grouting\groutingmaterial2r
GroutingMaterialText3	0-1	A text description of the Well Use if "OTHER" is selected for the Grouting Material Type ID 3.		welldata\wellog\wellfeatures\grouting\groutingmaterial3r
GroutingBagsQuantity1	0-1	The number of bags of grout for the first grout layer.	Required for Contractors if Well Grouted = Yes AND Well Type is not (Deepening, Dry Hole, or Boring no casing) AND Pump Installation Only is not "Y"	welldata\wellog\wellfeatures\grouting\noofbags
GroutingBagsQuantity2	0-1	The number of bags of grout for the second grout layer.	Required for Contractors if Well Grouted = Yes AND Well Type is not (Deepening, Dry Hole, or Boring no casing) AND Pump Installation Only is not "Y" AND a value is entered for Grouting Material 2	n\ a

GroutingBagsQuantity3	0-1	The number of bags of grout for the third grout layer.	Required for Contractors if Well Grouted = Yes AND Well Type is not (Deepening, Dry Hole, or Boring no casing) AND Pump Installation Only is not "Y" AND a value is entered for Grouting Material 3	n\a
GroutingFromDepth1	0-1	The upper depth of the first grout layer.	Required for Contractors if Well Grouted = Yes AND Drilling Method is (Rotary or Hollow Rod) AND Well Type is not (Deepening, Dry Home or Boring no casing) AND PIO is not "Yes". Must be less than to ft. depth1.	welldata\wellog\wellfeatures\grouting\wellgroutedfrom1
GroutingFromDepth2	0-1	The upper depth of the second grout layer.	Required for Contractors if Well Grouted = Yes AND Drilling Method is (Rotary or Hollow Rod) AND Well Type is not (Deepening, Dry Home or Boring no casing) AND PIO is not "Yes". Must be less than to ft. depth2.	welldata\wellog\wellfeatures\grouting\wellgroutedfrom2
GroutingFromDepth3	0-1	The upper depth of the third grout layer.	Required for Contractors if Well Grouted = Yes AND Drilling Method is (Rotary or Hollow Rod) AND Well Type is not (Deepening, Dry Home or Boring no casing) AND PIO is not "Yes". Must be less than to ft. depth2.	welldata\wellog\wellfeatures\grouting\wellgroutedfrom3
GroutingToDepth1	0-1	The lower depth of the first grout layer	Required for Contractors when Drilling Method is (Rotary or Hollow Rod) AND Well Type is not (Deepening, Dry Hole, or Boring no casing) AND PIO is not "Yes". Must be greater than from ft1.	welldata\wellog\wellfeatures\grouting\wellgroutedto1
GroutingToDepth2	0-1	The lower depth of the second grout layer.	Required for Contractors when Drilling Method is (Rotary or Hollow Rod) AND Well Type is not (Deepening, Dry Hole, or Boring no casing) AND PIO is not "Yes". Must be greater than from ft2.	welldata\wellog\wellfeatures\grouting\wellgroutedto2
GroutingToDepth3	0-1	The lower depth of the third grout layer.	Required for Contractors when Drilling Method is (Rotary or Hollow Rod) AND Well Type is not (Deepening, Dry Hole, or Boring no casing) AND PIO is not "Yes". Must be greater than from ft3.	welldata\wellog\wellfeatures\grouting\wellgroutedto3
GroutingAdditiveTypeID1	0-1	Must be a value from the RefGroutingAdditiveType table in Wellog.	Required if Well Grouted = Yes AND Well Type is not (Deepening, Dry Hole, or Boring no casing) AND PIO is not "Yes"	welldata\wellog\wellfeatures\grouting\additives
GroutingAdditiveTypeID2	0-1	Must be a value from the RefGroutingAdditiveType table in Wellog.	Required if Well Grouted = Yes AND Well Type is not (Deepening, Dry Hole, or Boring no casing) AND PIO is not "Yes" AND a value is provided for Grouting Material 2	n\a

GroutingAdditiveTypeID3	0-1	Must be a value from the RefGroutingAdditiveType table in Wellogic.	Required if Well Grouted = Yes AND Well Type is not (Deepening, Dry Hole, or Boring no casing) AND PIO is not "Yes" AND a value is provided for Grouting Material 3	n\a
GroutingAdditiveText1	0-1	A text description of the Well Use if "OTHER" is selected for the Grouting Additive Type ID 1.		welldata\wellog\wellfeatures\grouting\additivesr
GroutingAdditiveText2	0-1	A text description of the Well Use if "OTHER" is selected for the Grouting Additive Type ID 2.		n\a
GroutingAdditiveText3	0-1	A text description of the Well Use if "OTHER" is selected for the Grouting Additive Type ID 3.		n\a
<b>ScreenDetails</b>	<b>1</b>	<b>Information about the screen, if installed.</b>		<b>welldata\wellog\wellfeatures\screen</b>
ScreenInstalledIndicator	1	Indicates whether or not a screen was installed.	Required for Contractors when Pump Installation Only is not "Y"	welldata\wellog\wellfeatures\screen\scrinstalled
WellIntakeTypeID	0-1	Must be a value from the RefWellIntakeType table in Wellogic. Applies when Screen Installed = "N".	Required only when Screen Installed = No AND Well Type is not (Dry Hole, Deepening, or Boring No Casing) AND Pump Installation Only is not "Yes"	welldata\wellog\wellfeatures\screen\wellintake
FilterPackedIndicator	0-1	Indicates whether or not the well was filter packed.	Required when Screen Installed = Yes.	welldata\wellog\wellfeatures\screen\filterpacked
ScreenMaterialTypeID	0-1	Must be a value from the RefScreenMaterialType table in Wellogic.	Required when Screen Installed = Yes.	welldata\wellog\wellfeatures\screen\scrmaterialtype
ScreenMaterialText	0-1	A text description of the Well Use if "OTHER" is selected for the Screen Material Type ID.		welldata\wellog\wellfeatures\screen\scrmaterialtype
ScreenInstallationTypeID	0-1	Must be a value from the RefScreenInstallationType table in Wellogic.	Required when Screen Installed = Yes.	welldata\wellog\wellfeatures\screen\scrdiametermeas
ScreenDiameterInches	0-1	The diameter of the screen.	Required for Contractors when Screen Installed = Yes.	welldata\wellog\wellfeatures\screen\scrdiameter
ScreenBlankFeet	0-1	The length of the screen blank in feet.		welldata\wellog\wellfeatures\screen\scrblanklength
ScreenBlankLocationType	0-1	The location of the screen blank. Must be either "ABOVE", "BELOW", or "BETW".		welldata\wellog\wellfeatures\screen\scrblank
SlotSize1	0-1	The slot size of the first screen	Required for Contractors when Screen Installed = Yes.	welldata\wellog\wellfeatures\screen\scrslot
SlotSize2	0-1	The slot size of the second screen		n\a
SlotSize3	0-1	The slot size of the third screen		n\a
ScreenLengthFeet1	0-1	The length of the first screen	Required for Contractors when Screen Installed = Yes.	welldata\wellog\wellfeatures\screen\scrlength

ScreenLengthFeet2	0-1	The length of the second screen	Required for Contractors only when Screen Installed = Yes and a value is entered for Slot2.	n\a
ScreenLengthFeet3	0-1	The length of the third screen	Required for Contractors only when Screen Installed = Yes and a value is entered for Slot3.	n\a
ScreenDepthFromFeet1	0-1	The upper depth of the first screen	Required for Contractors when Screen Installed = Yes.	welldata\wellog\wellfeatures\screen\scrslotsetfrom
ScreenDepthFromFeet2	0-1	The upper depth of the second screen	Required for Contractors only when Screen Installed = Yes and a value is entered for Slot2.	n\a
ScreenDepthFromFeet3	0-1	The upper depth of the third screen	Required for Contractors only when Screen Installed = Yes and a value is entered for Slot3.	n\a
ScreenDepthToFeet1	0-1	The lower depth of the first screen	Required for Contractors when Screen Installed = Yes.	welldata\wellog\wellfeatures\screen\scrslotsetto
ScreenDepthToFeet2	0-1	The lower depth of the second screen	Required for Contractors only when Screen Installed = Yes and a value is entered for Slot2.	n\a
ScreenDepthToFeet3	0-1	The lower depth of the third screen	Required for Contractors only when Screen Installed = Yes and a value is entered for Slot3.	n\a
ScreenFittingTypeID	0-n	Must be a value from the RefScreenFittingType table in Wellogic.	Required when Screen Installed = Yes.	welldata\wellog\wellfeatures\screen\screenfittings\scrfitvalue
ScreenFittingText	0-1	A text description of the Well Use if "OTHER" is selected for the Screen Fitting Type ID.		welldata\wellog\wellfeatures\screen\scrfittingsr
<b>WellYieldTestDetails</b>	<b>1</b>	<b>Information about the well yield test.</b>		<b>welldata\wellog\wellfeatures\waterlevel</b>
StaticWaterLevelFeet	0-1	The static water level of the well	Required for Contractors when Screen Installed = Yes.	welldata\wellog\wellfeatures\waterlevel\staticwl
FlowingIndicator	1	Indicates whether or not the plugged well was flowing	Required when Screen Installed = Yes.	welldata\wellog\wellfeatures\waterlevel\staticwlttype
UnrestrictedFlowRateGPM	0-1	The unrestricted flow rate of the flowing well		n\a
PumpingLevelFeet1	0-1	Pumping level measurement of the first yield test		welldata\wellog\wellfeatures\depthpumping\depthwhilepumping1
PumpingLevelFeet2	0-1	Pumping level measurement of the second yield test		welldata\wellog\wellfeatures\depthpumping\depthwhilepumping2
PumpingLevelFeet3	0-1	Pumping level measurement of the third yield test		welldata\wellog\wellfeatures\depthpumping\depthwhilepumping3
PumpingTimeHours1	0-1	Length of time of the first yield test		welldata\wellog\wellfeatures\depthpumping\pumpingtime1
PumpingTimeHours2	0-1	Length of time of the second yield test		welldata\wellog\wellfeatures\depthpumping\pumpingtime2
PumpingTimeHours3	0-1	Length of time of the third yield test		welldata\wellog\wellfeatures\depthpumping\pumpingtime3



PumpingRateGPM1	0-1	Capacity of the first yield test		welldata\wellog\wellfeatures\depthpumping\pumpingcapacity1
PumpingRateGPM2	0-1	Capacity of the second yield test		welldata\wellog\wellfeatures\depthpumping\pumpingcapacity2
PumpingRateGPM3	0-1	Capacity of the third yield test		welldata\wellog\wellfeatures\depthpumping\pumpingcapacity3
YieldTestMethodTypeID	1	The method used for the well yield test	Required when Screen Installed = Yes.	welldata\wellog\wellfeatures\depthpumping\yieldtestmethod
YieldTestMethodText	0-1	The user-supplied remark if OTHER was selected for the YieldTestMethodTypeID		welldata\wellog\wellfeatures\depthpumping\yieldtestmethodr
WellheadCompletionTypeID	0-n	The unique identifier for the RefWellheadCompletionType table.		welldata\wellog\completionpump\wellheadcompletion\wellheadcompvalue
WellheadCompletionText	0-1	The user-supplied remark if OTHER was selected for WellheadCompletion		welldata\wellog\completionpump\wellheadcompletion\wellheadcompem
<b>ContaminationSourceDetails</b>	<b>0-1</b>	<b>Information about potential sources of contamination.</b>		<b>welldata\wellog\completionpump\possiblecontamination\</b>
ContaminationSourceTypeID1	0-1	The type of first contamination source	Required when Well Type is not (Dry Hole or Boring No Casing).	welldata\wellog\completionpump\possiblecontamination\contaminanttype1
ContaminationSourceTypeID2	0-1	The type of second contamination source		welldata\wellog\completionpump\possiblecontamination\contaminanttype2
ContaminationSourceText1	0-1	The user-supplied remark if OTHER was selected for the ContaminationSourceTypeID1		welldata\wellog\completionpump\possiblecontamination\contaminanttype1r
ContaminationSourceText2	0-1	The user-supplied remark if OTHER was selected for the ContaminationSourceTypeID2		welldata\wellog\completionpump\possiblecontamination\contaminanttype2r
ContaminationSourceDistanceFeet1	0-1	The distance from the well to the first contamination source	Required for Contractors when a value is entered for Type1 and that value is not = None.	welldata\wellog\completionpump\possiblecontamination\contaminantdist1
ContaminationSourceDistanceFeet2	0-1	The distance from the well to the second contamination source	Required for Contractors when a value is entered for Type2 and that value is not = None.	welldata\wellog\completionpump\possiblecontamination\contaminantdist2
ContaminationSourceDirectionTypeID1	0-1	The direction from the well to the first contamination source	Required for Contractors when a value is entered for Type1 and that value is not = None.	welldata\wellog\completionpump\possiblecontamination\contaminantdir1
ContaminationSourceDirectionTypeID2	0-1	The direction from the well to the second contamination source	Required for Contractors when a value is entered for Type2 and that value is not = None.	welldata\wellog\completionpump\possiblecontamination\contaminantdir2
<b>PumpDetails</b>	<b>0-1</b>	<b>Information about the pump and whether the record is for pump installation only.</b>		<b>welldata\wellog\completionpump\pump</b>
PumpInstalledIndicator	0-1	Indicates whether or not a pump was installed. Y or N.	Required.	welldata\wellog\completionpump\pump\pumpinstalled
PumpInstallationOnlyIndicator	0-1	Indicates whether or not the record is a pump installation only record. Y or N.	Required when Pump Installed = "Yes"	welldata\wellog\completionpump\pump\pumpinstallationonly

CurrentWellOriginalLogID	0-1	WellID of the original drilling record, if known. Used for Pump Installation only records.		welldata\wellog\completionpump\pump\linkwellid
PumpInstalledDate	0-1	The date the pump was installed	Required for Contractors when Pump Installation Only = Yes.	welldata\wellog\completionpump\pump\pumpinstaldate
PumpManufacturerID	0-1	The manufacturer of the pump. Must be a value from the RefPumpManufacturer table in Wellogic.	Required when Pump Installed = "Yes"	welldata\wellog\completionpump\pump\pumpmanufacturer
PumpManufacturerText	0-1	The user-supplied remark if OTHER was selected for the PumpManufacturerID		welldata\wellog\completionpump\pump\pumpmanufacturerrem
PumpModelNumber	0-1	The model number of the pump	Required for Contractors when Pump Installed = "Yes"	welldata\wellog\completionpump\pump\modelnumber
PumpHorsepower	0-1	The horsepower of the pump	Required for Contractors when Pump Installed = "Yes"	welldata\wellog\completionpump\pump\pumpphp
PumpVoltage	0-1	The voltage of the pump		n\a
PumpCapacityGPM	0-1	The rated pump capacity	Required for Contractors when Pump Installed = "Yes"	welldata\wellog\completionpump\pump\pumpcapacity
LQWRegistrationNumber	0-1	The registration number assigned to a well with a 70 GPM pump capacity or greater		n\a
PumpTypeID	0-1	The type of pump . The unique identifier from the RefPumpType table.	Required when Pump Installed = "Yes"	welldata\wellog\completionpump\pump\pumptype
PumpTypeText	0-1	The user-supplied remark if OTHER was selected for the PumpTypeID		welldata\wellog\completionpump\pump\pumptyperem
DropPipeDiameterInches	0-1	The diameter of the drop-pipe	Required for Contractors when Pump Installed = "Yes"	welldata\wellog\completionpump\pump\droppipedia
DopPipeLengthFeet	0-1	The length of the drop-pipe	Required for Contractors when Pump Installed = "Yes"	welldata\wellog\completionpump\pump\droppipelength
DrawdownSealUsedIndicator	0-1	Indicates whether or not a drawdown seal was installed. Y or N.	Required when Pump Installed = "Yes"	welldata\wellog\completionpump\pump\drawdownseal
<b>PressureTankDetails</b>	<b>1</b>	<b>Information about the pressure tank, if installed.</b>		<b>welldata\wellog\completionpump\pressuretank</b>
TankInstalledIndicator	1	Indicates whether or not a pressure tank was installed. Y or N.	Required.	welldata\wellog\completionpump\pressuretank\pressuretankinst
TankBuriedIndicator	0-1	Indicates whether or not the pressure tank was buried. Y or N.	Required when Pressure Tank Installed = "Yes"	welldata\wellog\completionpump\pressuretank\buried
TankTypeID	0-1	The type of pressure tank. Must be a value from the RefTankType table in Wellogic.	Required when Pressure Tank Installed = "Yes"	welldata\wellog\completionpump\pressuretank\pressuretanktype
TankTypeText	0-1	A text description of the Well Use if "OTHER" is selected for the Tank Type ID.		welldata\wellog\completionpump\pressuretank\pressuretanktyper
TankManufacturerID	0-1	The manufacturer of the pressure tank. Must be a value from the RefTankManufacturer table in Wellogic.	Required when Pressure Tank Installed = "Yes"	welldata\wellog\completionpump\pressuretank\pmanufacturer
TankManufacturerText	0-1	The user-supplied remark if OTHER was selected for the TankManufacturerID		welldata\wellog\completionpump\pressuretank\pmanufacturerrem
TankModelNumber	0-1	The model number of the pressure tank	Required for Contractors when Pressure Tank	welldata\wellog\completionpump\pressuretank\

			Installed = "Yes"	modelno
TankCapacityGallons	0-1	The total capacity of the pressure tank	Required for Contractors when Pressure Tank Installed = "Yes"	welldata\wellog\completionpump\pressuretank\tankcap
TankReliefValveInstalledIndicator	0-1	Indicates whether or not a pressure relief valve was installed. Y or N.	Required when Pressure Tank Installed = "Yes"	welldata\wellog\completionpump\pressuretank\pressurevalve
<b>CoordinateDetails</b>	<b>0-1</b>	<b>Information about the geographic location of the well.</b>		<b>welldata\wellog\gps</b>
LatitudeMeasure	0-1	The latitude of the well in decimal degrees.	Required when Pump Installation Only is not "Yes"	welldata\wellog\gps\latitude
LongitudeMeasure	0-1	The longitude of the well in decimal degrees.	Required when Pump Installation Only is not "Yes"	welldata\wellog\gps\longitude
CollectionMethodTypeID	0-1	The method of collection of the latitude/longitude. Unique identifier from the RefCollectionMethodType table.	Required when Pump Installation Only is not "Yes"	welldata\wellog\gps\methodofcollection
AccuracyMeasure	0-1	The accuracy of the latitude/longitude reading	Required when Pump Installation Only is not "Yes"	welldata\wellog\gps\accuracyval
AccuracyMeasureUnitTypeID	0-1	The unit of the accuracy value. Unique identifier from the RefAccuracyMeasureUnitType table.	Required when Pump Installation Only is not "Yes"	welldata\wellog\gps\accuracyvalunit
CoordinateSourceTypeID	0-1	The source of the latitude/longitude coordinate. Unique Identifier from the RefCoordinateSourceType table.	Required when Pump Installation Only is not "Yes"	welldata\wellog\gps\source
CoordinateSourceText	0-1	The user-supplied remark if OTHER was selected for the CoordinateSourceTypeID		welldata\wellog\gps\sourcerem
CollectionDate	0-1	The date of collection of the latitude/longitude coordinate.	Required when Pump Installation Only is not "Yes"	welldata\wellog\gps\dateofcoll
CoordinateText	0-1	General remarks about the latitude/longitude information		welldata\wellog\gps\desccomments
HorizontalDatumTypeID	0-1	The datum used to measure the latitude/longitude position of the well. Unique Identifier from the RefHorizontalDatumType table.		welldata\wellog\gps\horizontaldatum
MapScaleTypeID	0-1	The scale of the map used. Unique Identifier from the RefMapScaleType table.		welldata\wellog\gps\mapscale
MapScaleText	0-1	The user-supplied remark if OTHER was selected for the MapScaleTypeID		welldata\wellog\gps\mapscalerem
ElevationCollectionMethodTypeID	0-1	The method of data collection for the elevation. Unique Identifier from the RefElevationCollectionMethodType table.		welldata\wellog\gps\elevationmoc
ElevationCollectionMethodText	0-1	The user-supplied remark if OTHER was selected for the ElevationCollectionMethodTypeID		welldata\wellog\gps\elevationmocrem
ElevationMeasure	0-1	The elevation of the latitude/longitude reading		welldata\wellog\gps\elevation
ElevationMeasureUnit	0-1	The unit of the elevation measure (ft. or mtrs.)		n\a

ElevationAccuracyMeasure	0-1	The accuracy of the elevation measurement		welldata\wellog\gps\elevationacc
ElevationAccuracyMeasureUnit	0-1	The accuracy unit of the elevation measurement		n\a
ElevationDatumTypeID	0-1	The datum used to measure the elevation of the well. Unique Identifier from the RefElevationDatumType table.		welldata\wellog\gps\elevationdatum
ElevationDatumText	0-1	The user-supplied remark if OTHER was selected for the ElevationDatumTypeID		welldata\wellog\gps\elevationdatumrem
<b>ContractorDetails</b>	<b>1</b>	<b>Information about the contractor that drilled the well.</b>		<b>welldata\wellog\contractordetails\contractor</b>
ContractorTypeID	1	The contractor type, such as a Master Plumber License. Must be a value from the RefContractorType table in Wellog.	Required.	welldata\wellog\contractordetails\contractor\contbuscert
ContractorTypeText	0-1	The user-supplied remark if OTHER was selected for the ContractorTypeID		welldata\wellog\contractordetails\contractor\contbuscertremarks
ContractoRegistrationNumber	0-1	The contractors registration number	Required for Contractors.	welldata\wellog\contractordetails\contractor\regnumber
ContractorFullName	0-1	The registered contractors name	Required for Contractors.	welldata\wellog\contractordetails\contractor\registeredrep
ContractorBusinessName	0-1	The contractors business name	Required for Contractors.	welldata\wellog\contractordetails\contractor\businessname
ContractorStreetAddress	0-1	The street address of the contractors business	Required for Contractors.	welldata\wellog\contractordetails\contractor\contaddress
ContractorCity	0-1	The city of the contractors business	Required for Contractors.	welldata\wellog\contractordetails\contractor\contaddress
ContractorStateID	0-1	The 2-character code for the state of the contractors business. Use CN for Canada.	Required for Contractors.	welldata\wellog\contractordetails\contractor\contaddress
ContractorZipCode	0-1	The zip code of the contractors business	Required for Contractors.	welldata\wellog\contractordetails\contractor\contaddress
DMOFullName	0-1	The drilling machine operators name	Required for Contractors when Pump Installation Only is not "Yes".	welldata\wellog\contractordetails\drillingmachineoperator\drillmachopname
DMOEmploymentTypeID	0-1	Must be a value from the RefDMOEmploymentType table in Wellog.	Required when Pump Installation Only is not "Yes".	welldata\wellog\contractordetails\drillingmachineoperator\employment
PumpInstallerDifferentIndicator	1	Indicates whether or not the pump installer is different from the drilling machine operator	Required.	welldata\wellog\contractordetails\pumpinstaller\pumpinstall
PumpInstallerFullName	0-1	The pump installers name	Required for Contractors only when Pump Installer Different from DMO = Yes	welldata\wellog\contractordetails\pumpinstaller\pumpinstallname
<b>PluggingDetails</b>	<b>1</b>	<b>Information about the plugging of a well, if performed.</b>		<b>welldata\wellog\contractordetails\abandonment</b>
AbandonedWellPluggedIndicator	0-1	Indicates whether or not the abandoned well was plugged. Applies to replacement wells only.	Required when Well Type = Replacement, Dry Hole, or Boring No Casing AND Pump Installation Only is not "Yes".	welldata\wellog\contractordetails\abandonment\abdwellplugged

NotPluggedReasonTypeID	0-1	The reason why the abandoned well was not plugged. Must be a value from the RefNotPluggedReasonType table in Wellog. Only applies when AbandonedWellPluggedIndicator = N	Required when Abandoned Well Plugged = No AND Well Type is (Replacement, Dry Hole, or Boring No Casing)	welldata\wellog\contractordetails\abandonment\reasonwellnotplugged
NotPluggedReasonText	0-1	The user-supplied remark if OTHER was selected for the NotPluggedReasonTypeID		welldata\wellog\contractordetails\abandonment\wellnotpluggedremarks
PluggedWellLatitudeMeasure	0-1	The latitude of the plugged well in decimal degrees.		n\a
PluggedWellLongitudeMeasure	0-1	The longitude of the plugged well in decimal degrees.		n\a
PluggedWellDiameterInches	0-1	The diameter of the plugged well	Required for Contractors when Abandoned Well Plugged = Yes.	welldata\wellog\abandonment\casingdia
PluggedWellDepthFeet	0-1	The depth of the plugged well		welldata\wellog\abandonment\abndwelldepth
PluggingMaterialTypeID	1	The plugging material used to plug the well. Unique identifier from RefPluggingMaterialType table.	Required when Abandoned Well Plugged = Yes.	welldata\wellog\abandonment\pluggingmat
PluggingMaterialText	0-1	The user-supplied remark if OTHER was selected for the PluggingMaterialTypeID		welldata\wellog\abandonment\pluggingmatrem
PluggingMaterialQuantity	0-1	The number of units of plugging material used. See reference table for unit type (i.e. bags, yards)	Required for Contractors when Abandoned Well Plugged = Yes.	welldata\wellog\abandonment\abndnoofbags
PluggedWellCasingRemovedIndicator	0-1	Indicates whether or not the casing was removed during plugging. Y or N.	Required when Abandoned Well Plugged = Yes.	welldata\wellog\abandonment\casingremoved
PluggedWellOriginalLogID	0-1	The Well ID of the plugged well's original drilling record, if known.		welldata\wellog\contractordetails\abandonment\ioldwell

## Abandoned Water Well Plugging Record Schema

Element Name	Schema Occurs	Description	Business Rules
<b>AbandonedWaterWellSubmission</b>	<b>1</b>	<b>The root element for Abandoned Water Well submissions to Wellogic</b>	
<b>WellLog</b>	<b>1-n</b>	<b>An Abandoned Well Plugging Record.</b>	
<b>WellDetails</b>	<b>1</b>	<b>The well location, type, use, and related information.</b>	
PermitNumber	0-1	The well construction permit number.	
TaxNumber	0-1	The tax number assigned to the property.	
<b>WellLocationDetails</b>	<b>1</b>		
CountyID	1	The county where the well is located. References the County lookup table in Wellogic.	Required.
TownshipID	1	The township where the well is located. References the Township lookup table in Wellogic.	Required. Must be within County selected.
TownRangeID	1	The town/range where the well is located. References the TownRange lookup table in Wellogic.	Required. Must be within Township selected.
SectionNumber	1	The section where the well is located. Must be between 1 and 36.	Required. Must be between 1 and 36.
<b>WellAddressDetails</b>	<b>1</b>		
WellDistanceDirectionText	0-1	Where the well is located in relation to a road intersection	Required for Contractors.
WellStreetAddress	0-1	The street address of the well.	
WellCityName	0-1	The city where the well is located.	Required for Contractors.
WellStateID	1	The two-character state code where the well is located. Use CN for Canada.	Required.
WellZipCode	0-1	The well zip code	
<b>WellOwnerDetails</b>	<b>0-1</b>		
WellOwnerFullName	0-1	The well owner's full name.	Required for Contractors.
WellOwnerAddressSameAsWellIndicator	1	Indicates that the well owner's address is the same as the well address.	Required.
WellOwnerStreetAddress	0-1	The well owner's street address.	Required for Contractors.
WellOwnerCityName	0-1	The well owner's city of residence.	Required for Contractors.
WellOwnerStateID	0-1	The two-character state code for the well owner's address. Use CN for Canada.	
WellOwnerZipCode	0-1	The well owner's zip code.	Required for Contractors.
WellUseTypeID	1	The use of the well. Must be a value from the RefWellUseType table in Wellogic.	Required.
WellUseText	0-1	A text description of the Well Use if "OTHER" is selected for the Well Use Type ID.	

WellConstructionTypeID	0-1	Must be a value from the RefWellConstructionType table in Wellogic.	Required.
WellConstructionText	0-1	A text description of the Well Status if "OTHER" is selected for the Well Construction Type ID.	
WSSN	0-1	The water supply serial number assigned to a Type I or II well.	
SourceIDOrWellNumber	0-1	The well number assigned to a type I or II well.	
PluggedDate	0-1	The date the well was plugged.	Required. Can't be future date.
WellText	0-1	General remarks for the Abandoned Water Well Plugging record.	
UserSuppliedWellLogID	1	The user supplied ID for a record uploaded via XML.	
PluggedWellOriginalLogID	0-1	The Well ID of the plugged well's original drilling record, if known.	
<b>PluggingMaterial</b>	<b>0-n</b>	<b>A list of the plugging materials used on an abandoned well.</b>	
SequenceNumber	1	The sequential number for the plugging layer arranged from top to bottom.	
PluggingMaterialTypeID	1	Must be a value from the RefPluggingMaterialType table in Wellogic.	Required.
PluggingMaterialText	0-1	A text description of the Well Use if "OTHER" is selected for the Plugging Material Type ID.	
PluggingMaterialFromDepthFeet	0-1	The upper depth of the plugging layer.	
PluggingMaterialToDepthFeet	0-1	The lower depth of the plugging layer.	
PluggingMaterialQuantity	0-1	The number of units of plugging material used.	Required for Contractors.
PluggingMaterialText	0-1	Remarks about the plugging materials on an AW record.	
<b>CoordinateDetails</b>	<b>0-1</b>	<b>Information about the geographic location of the well.</b>	
LatitudeMeasure	0-1	The latitude of the well in decimal degrees.	
LongitudeMeasure	0-1	The longitude of the well in decimal degrees.	
CollectionMethodTypeID	0-1	The method of collection of the latitude/longitude. Unique identifier from the RefCollectionMethodType table.	
AccuracyMeasure	0-1	The accuracy of the latitude/longitude reading	
AccuracyMeasureUnitTypeID	0-1	The unit of the accuracy value. Unique identifier from the RefAccuracyMeasureUnitType table.	
CoordinateSourceTypeID	0-1	The source of the latitude/longitude coordinate. Unique Identifier from the RefCoordinateSourceType table.	
CoordinateSourceText	0-1	The user-supplied remark if OTHER was selected for the CoordinateSourceTypeID	
CollectionDate	0-1	The date of collection of the latitude/longitude coordinate.	
CoordinateText	0-1	General remarks about the latitude/longitude information	
HorizontalDatumTypeID	0-1	The datum used to measure the latitude/longitude position of the well. Unique Identifier from the RefHorizontalDatumType table.	

HorizontalDatumText	0-1	The user-supplied remark if OTHER was selected for the HorizontalDatumTypeID	
MapScaleTypeID	0-1	The scale of the map used. Unique Identifier from the RefMapScaleType table.	
MapScaleText	0-1	The user-supplied remark if OTHER was selected for the MapScaleTypeID	
ElevationCollectionMethodTypeID	0-1	The method of data collection for the elevation. Unique Identifier from the RefElevationCollectionMethodType table.	
ElevationCollectionMethodText	0-1	The user-supplied remark if OTHER was selected for the ElevationCollectionMethodTypeID	
ElevationMeasure	0-1	The elevation of the latitude/longitude reading	
ElevationMeasureUnit	0-1	The unit of the elevation measure (ft. or mtrs.)	
ElevationAccuracyMeasure	0-1	The accuracy of the elevation measurement	
ElevationAccuracyMeasureUnit	0-1	The accuracy unit of the elevation measurement	
ElevationDatumTypeID	0-1	The datum used to measure the elevation of the well. Unique Identifier from the RefElevationDatumType table.	
ElevationDatumText	0-1	The user-supplied remark if OTHER was selected for the ElevationDatumTypeID	
<b>AbandonmentDetails</b>	<b>1</b>		
WellDepthFeet	0-1	The depth of the plugged well.	
PluggedWellDiameterInches	0-1	The diameter of the plugged well.	
AbandonmentReasonTypeID	1	Must be a value from the RefAbandonmentReasonType table in Wellogic.	Required.
AbandonmentReasonText	0-1	A text description of the Well Use if "OTHER" is selected for the Abandonment Reason Type ID.	
AbandonmentMethodTypeID	0-1	Must be a value from the RefAbandonmentMethodType table in Wellogic.	Required for Contractors.
AbandonmentMethodText	0-1	A text description of the Well Use if "OTHER" is selected for the Abandonment Method Type ID.	
PumpingEquipmentRemovedIndicator	0-1	Indicates whether or not pump equipment was removed from the abandoned well.	Required.
RemovedEquipmentTypeID	0-n	A list of the equipment removed from a plugged well. Applies to AW records only. Must be a value from the RefEquipmentType table in Wellogic.	Required when Pumping Equipment Removed = Y.
PumpingEquipmentRemovedText	0-1	A text description of the Well Use if "OTHER" is selected for the Equipment Type ID.	
<b>ContractorDetails</b>	<b>1</b>	<b>Information about the contractor that drilled the well.</b>	
ContractorTypeID	0-1	The contractor type, such as a Master Plumber License. Must be a value from the RefContractorType table in Wellogic.	Required.
ContractorTypeText	0-1	The user-supplied remark if OTHER was selected for the ContractorTypeID	
ContractoRegistrationNumber	0-1	The contractors registration number	Required for Contractors.
ContractorFullName	0-1	The registered contractors name	Required for Contractors.



ContractorBusinessName	0-1	The contractors business name	Required for Contractors.
ContractorStreetAddress	0-1	The street address of the contractors business	Required for Contractors.
ContractorCity	0-1	The city of the contractors business	Required for Contractors.
ContractorStateID	0-1	The 2-character code for the state of the contractors business. Use CN for Canada.	Required for Contractors.
ContractorZipCode	0-1	The zip code of the contractors business	Required for Contractors.
<b>CasingDetails</b>	<b>0-1</b>		
CasingTypeID	0-1	Must be a value from the RefCasingType table in Wellogic.	Required.
CasingTypeText	0-1	A text description of the Well Use if "OTHER" is selected for the Casing Type ID.	
CasingDiameterInches1	0-1	The casing diameter of the well.	
CasingDiameterInches2	0-1	The second casing diameter of the well.	
CasingDiameterInches3	0-1	The third casing diameter of the well.	
CasingDepthFeet1	0-1	The first casing depth of the well.	
CasingDepthFeet2	0-1	The second casing depth of the well.	
CasingDepthFeet3	0-1	The third casing depth of the well.	
PluggedWellCasingRemovedIndicator	0-1	Indicates whether or not the casing was removed during plugging. Y or N.	
CasingHeightFeet	0-1	The casing height after the well is plugged. Use negative Numbers for below grade.	Required for Contractors when Casing Type is not "none" or Casing Removed is not checked