

[illegible]

Environmental conditions and measurements	pH measurement method	GENEPIO-0100781	The process used to measure pH value.	Provide the name of the procedure or technology used to measure pH.	pH test strip (litmus test)	1.00	1.00	1.00																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					</
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Parent Class	Field	Ontology Identifier	Definition	Guidance	Examples	Deprecated Label	Deprecated ID	Version Tracking Label	ID	Description/ Guidance	Editor Notes			
	Colour Code Legend field name in yellow = required field name in purple = recommended field name in white = optional										Template			
											WastewaterSARS-CoV-2;WastewaterAMR;WastewaterPathogenAgnostic			
Database identifiers	specimen collector sample ID	GENEPIO:0001123	The user-defined name for the sample.	Store the collector sample ID. If this number is considered identifiable information, provide an alternative ID. Be sure to store the key that maps between the original and alternative IDs for traceability and follow up if necessary. Every collector sample ID from a single submitter must be unique. It can have any format, but we suggest that you make it concise, unique and consistent within your lab.	ASDFG123			1.0.0	1.0.0	1.0.0	WastewaterSARS-CoV-2;WastewaterAMR;WastewaterPathogenAgnostic			
Database identifiers	specimen collector subsample ID	GENEPIO:0100752	The user-defined identifier assigned to a portion of the original sample.	Store the ID for the subsample/aliquot.	ASDFG123_12			1.0.0	1.0.0	1.0.0	WastewaterSARS-CoV-2;WastewaterAMR;WastewaterPathogenAgnostic			
Database identifiers	pooled sample ID	GENEPIO:0100996	The user-defined identifier assigned to a combined (pooled) set of samples.	If the sample being analyzed is the result of pooling individual samples, rename the pooled sample with a new identifier. Store the pooled sample ID.	12345AYZ			1.0.0	1.0.0	1.0.0	WastewaterSARS-CoV-2;WastewaterAMR;WastewaterPathogenAgnostic			
Database identifiers	metagenome-assembled genome (MAG) ID	GENEPIO:0100753	The user-defined identifier assigned to a genome reconstructed from metagenomic data.	Store the MAG ID.	XYZ1234.1			1.0.0	1.0.0	1.0.0	WastewaterAMR;WastewaterPathogenAgnostic			
Database identifiers	specimen collector project ID	GENEPIO:0100918	The user-defined project name assigned to a sequencing project.	If the sample was collected or analyzed under the umbrella of a specific project, include the name of that project here.				1.0.0	1.0.0	1.0.0	WastewaterSARS-CoV-2;WastewaterAMR;WastewaterPathogenAgnostic			
Database identifiers	BioProject accession	GENEPIO:0001136	The INSDC (i.e., ENA, NCBI, or DDBJ) accession number of the BioProject(s) to which the BioSample belongs.	Store the BioProject accession number. BioProjects are an organizing tool that links together raw sequence data, assemblies, and their associated metadata. Each province will be assigned a different bioproject accession number by the National Microbiology Lab. A valid NCBI BioProject accession has prefix PRJN e.g., PRJNA12345, and is created once at the beginning of a new sequencing project.	PRJNA608651			1.0.0	1.0.0	1.0.0	WastewaterSARS-CoV-2;WastewaterAMR;WastewaterPathogenAgnostic			
Database identifiers	BioSample accession	GENEPIO:0001139	The identifier assigned to a BioSample in INSDC (i.e., ENA, NCBI, or DDBJ) archives.	Store the accession returned from the BioSample submission. NCBI BioSamples will have the prefix SAMN, ENA have the prefix SAMEA, DDBJ have SAMD	SAMN14180202, SAMEA00000002, SAMD00000001			1.0.0	1.0.0	1.0.0	WastewaterSARS-CoV-2;WastewaterAMR;WastewaterPathogenAgnostic			
Database identifiers	INSDC sequence read accession	GENEPIO:0101203	The identifier assigned to a sequence in one of the International Nucleotide Sequence Database Collaboration (INSDC) repositories.	Store the accession assigned to the submitted sequence. European Nucleotide Archive (ENA) sequence accessions start with ERR, NCBI-SRA accessions start with SRR, DNA Data Bank of Japan (DDBJ) accessions start with DRR and Genome Sequence Archive (GSA) accessions start with CRR.	ERR123456, DRR123456, CRR123456			3.1.1	3.1.1	3.1.1	WastewaterSARS-CoV-2;WastewaterAMR;WastewaterPathogenAgnostic			
Database identifiers	Enterobase accession	GENEPIO:0100759	The identifier assigned to a sequence in Enterobase archives.	Store the barcode assigned to the submitted sequence. Enterobase barcodes start with different 3 letter codes depending on the organism.	SAL_AA0019AA_ST			1.0.0	1.0.0	1.0.0	WastewaterSARS-CoV-2;WastewaterAMR;WastewaterPathogenAgnostic			
Database identifiers	INSDC assembly accession	GENEPIO:0101204	The versioned identifier assigned to an assembly or consensus sequence in one of the International Nucleotide Sequence Database Collaboration (INSDC) repositories.	Store the versioned accession assigned to the submitted sequence e.g. the GenBank accession version.	LZ986655.1			3.1.1	3.1.1	3.1.1	WastewaterSARS-CoV-2;WastewaterAMR;WastewaterPathogenAgnostic			
Database identifiers	GISAID accession	GENEPIO:0001147	The identifier assigned to a sequence in GISAID (the Global Initiative on Sharing All Influenza Data) archives.	Store the accession assigned to the submitted sequence. GISAID accessions start with EPI.	EPI_ISL_402131			1.0.0	1.0.0	1.0.0	WastewaterSARS-CoV-2;WastewaterAMR;WastewaterPathogenAgnostic			
Database identifiers	GISAID virus name	GENEPIO:0100282	The user-defined GISAID virus name assigned to the sequence.	GISAID virus names should be in the format "hCoV-19/Country/Identifier/year".	hCoV-19/Canada/prov_rona_99/2020			1.0.0	1.0.0	1.0.0	WastewaterSARS-CoV-2;WastewaterAMR;WastewaterPathogenAgnostic			
Database identifiers	sampling site ID	GENEPIO:0100760	The user-defined identifier assigned to a specific location from which samples are taken.	Store the ID for the site from which a sample was taken. The "site" is user defined (e.g. it may be a building and its environs, a specific entity within an environment). Please use the same site ID for all samples from a given site, regardless of when these samples were taken. Any important changes in site location, should be represented with a new site ID.	Site 12A			1.0.0	1.0.0	1.0.0	WastewaterSARS-CoV-2;WastewaterAMR;WastewaterPathogenAgnostic			
Database identifiers	sampling event ID	GENEPIO:0100761	The user-defined identifier assigned to a specific event during which one or more samples are taken, from one or more sites.	Store the ID for the event during which a sample or samples were taken. For example, an event could be one person taking samples from multiple sites, or multiple people taking samples from one site.	Event 120522.1			1.0.0	1.0.0	1.0.0	WastewaterSARS-CoV-2;WastewaterAMR;WastewaterPathogenAgnostic			
	Sample collection and processing	GENEPIO:0001150									WastewaterSARS-CoV-2;WastewaterAMR;WastewaterPathogenAgnostic			
Sample collection and processing	sample collection data steward name	GENEPIO:0100762	The name of the individual responsible for the data governance, (meta)data usage and distribution of the sample.	Provide the name of the sample collection data steward.	Joe Bloggs			1.0.0	1.0.0	1.0.0	WastewaterSARS-CoV-2;WastewaterAMR;WastewaterPathogenAgnostic			
Sample collection and processing	sample collected by laboratory name	GENEPIO:0100428	The specific laboratory affiliation of the sample collector.	Provide the name of the specific laboratory that collected the sample (avoid abbreviations). If the information is unknown or cannot be provided, leave blank or provide a null value.	Topp Lab			3.1.1	3.1.1	3.1.1	WastewaterSARS-CoV-2;WastewaterAMR;WastewaterPathogenAgnostic			
Sample collection and processing	sample collected by	GENEPIO:0001153	The name of the organization with which the sample collector is affiliated.	The name of the agency should be written out in full, (with minor exceptions) and be consistent across multiple submissions.	Public Health Agency of Canada			1.0.0	1.0.0	1.0.0	WastewaterSARS-CoV-2;WastewaterAMR;WastewaterPathogenAgnostic			
Sample collection and processing	sample collector contact name	GENEPIO:0100432	The name or job title of the contact responsible for follow-up regarding the sample.	Provide the name of an individual or their job title. As personnel turnover may render the contact's name obsolete, it is more preferable to provide a job title for ensuring accuracy of information and institutional memory. If the information is unknown or cannot be provided, leave blank or provide a null value.	Joe Bloggs, Enterics Lab Manager			3.1.1	3.1.1	3.1.1	WastewaterSARS-CoV-2;WastewaterAMR;WastewaterPathogenAgnostic			
Sample collection and processing	sample collector contact email	GENEPIO:0001156	The email address of the contact responsible for follow-up regarding the sample.	The email address can represent a specific individual or lab e.g. johannybloggs@lab.ca, or RespLab@lab.ca	WaterTester@facility.ca			1.0.0	1.0.0	1.0.0	WastewaterSARS-CoV-2;WastewaterAMR;WastewaterPathogenAgnostic			
Sample collection and processing	geo loc name (country)	GENEPIO:0001181	The country of origin of the sample.	If known, select a value from the pick list.	Canada			1.0.0	1.0.0	1.0.0	WastewaterSARS-CoV-2;WastewaterAMR;WastewaterPathogenAgnostic			

Sample collection and processing	geo loc name (state/province/territory)	GENEPIO:0001185	The state/province/territory of origin of the sample.	Provide the state/province/territory name from the GAZ geography ontology. Search for geography terms here: https://www.ebi.ac.uk/ols/ontologies/gaz	Western Cape				1.0.0	1.0.0	1.0.0	WastewaterSARS-CoV-2;WastewaterAMR;WastewaterPathogenAgnostic
Sample collection and processing	geo loc name (county/region)	GENEPIO:0100280	The county/region of origin of the sample.	Provide the county/region name from the GAZ geography ontology. Search for geography terms here: https://www.ebi.ac.uk/ols/ontologies/gaz	Derbyshire				1.0.0	1.0.0	1.0.0	WastewaterSARS-CoV-2;WastewaterAMR;WastewaterPathogenAgnostic
Sample collection and processing	geo loc name (city)	GENEPIO:0001189	The city of origin of the sample.	Provide the city name from the GAZ geography ontology. Search for geography terms here: https://www.ebi.ac.uk/ols/ontologies/gaz	Vancouver				1.0.0	1.0.0	1.0.0	WastewaterSARS-CoV-2;WastewaterAMR;WastewaterPathogenAgnostic
Sample collection and processing	geo loc name (site)	GENEPIO:0100436	The name of a specific geographical location e.g. Credit River (rather than river).	Provide the name of the specific geographical site using a specific noun (a word that names a certain place, thing).	Credit River				1.0.0	1.0.0	1.0.0	WastewaterSARS-CoV-2;WastewaterAMR;WastewaterPathogenAgnostic
Sample collection and processing	geo loc latitude	GENEPIO:0100309	The latitude coordinates of the geographical location of sample collection.	Provide latitude coordinates if available. Do not use the centre of the city/region/province/state/country or the location of your agency as a proxy, as this implicates a real location and is misleading. Specify as degrees latitude in format "d[d.dddd] N S".	38.98 N				1.0.0	1.0.0	1.0.0	WastewaterSARS-CoV-2;WastewaterAMR;WastewaterPathogenAgnostic
Sample collection and processing	geo loc longitude	GENEPIO:0100310	The longitude coordinates of the geographical location of sample collection.	Provide longitude coordinates if available. Do not use the centre of the city/region/province/state/country or the location of your agency as a proxy, as this implicates a real location and is misleading. Specify as degrees longitude in format "d[dd.dddd] W E".	77.11 W				1.0.0	1.0.0	1.0.0	WastewaterSARS-CoV-2;WastewaterAMR;WastewaterPathogenAgnostic
Sample collection and processing	watershed shapefile availability	GENEPIO:0100919	The availability status of a shapefile describing the catchment contributing to a watershed.	Select a value from the picklist to describe whether or not a watershed shapefile would be available upon request.	watershed shapefile available				1.0.0	1.0.0	1.0.0	WastewaterSARS-CoV-2;WastewaterAMR;WastewaterPathogenAgnostic
Sample collection and processing	organism	GENEPIO:0001191	Taxonomic name of the organism.	Provide the official nomenclature for the organism(s) present in the sample. Multiple organisms can be entered, separated by semicolons. Avoid abbreviations. Search for taxonomic names here: ncbi.nlm.nih.gov/taxonomy .	Vibrio cholerae				1.0.0	1.0.0	1.0.0	WastewaterPathogenAgnostic
Sample collection and processing	organism	GENEPIO:0001191	Taxonomic name of the organism.	Provide the official nomenclature for the organism(s) present in the sample if AMR profiles are assigned to organisms. Multiple organisms can be entered separated by semicolons. Avoid abbreviations. Search for taxonomic names here: ncbi.nlm.nih.gov/taxonomy .	Vibrio cholerae				1.0.0	1.0.0	1.0.0	WastewaterAMR
Sample collection and processing	purpose of sampling	GENEPIO:0001198	The reason that the sample was collected.	The reason a sample was collected may provide information about potential biases in sampling strategy. Provide the purpose of sampling from the picklist in the template. Most likely, the sample was collected for Public health surveillance. The reason why a sample was originally collected may differ from the reason why it was selected for sequencing, which should be indicated in the "purpose of sequencing" field.	Public health surveillance				1.0.0	1.0.0	1.0.0	WastewaterSARS-CoV-2;WastewaterAMR;WastewaterPathogenAgnostic
Sample collection and processing	scale of sampling	GENEPIO:0100877	The range of locations or entities sampled expressed in general terms.	Provide the scale of wastewater sampling by selecting a value from the picklist.	Community-level surveillance				1.0.0	1.0.0	1.0.0	WastewaterSARS-CoV-2;WastewaterAMR;WastewaterPathogenAgnostic
Sample collection and processing	sample received date	GENEPIO:0001179	The date on which the sample was received.	Provide the sample received date in ISO 8601 format, i.e. "YYYY-MM-DD".	2020-03-28				1.0.0	1.0.0	1.0.0	WastewaterSARS-CoV-2;WastewaterAMR;WastewaterPathogenAgnostic
Sample collection and processing	sample collection start date	GENEPIO:0001174	The date on which the sample was collected, or sampling began for a continuous sample.	If your sample is a continuous sample please use this field to capture your start date. Sample collection date is critical for surveillance and many types of analyses. Required granularity includes year, month and day. The date should be provided in ISO 8601 standard format "YYYY-MM-DD".	2020-03-16				1.0.0	1.0.0	1.0.0	WastewaterSARS-CoV-2;WastewaterAMR;WastewaterPathogenAgnostic
Sample collection and processing	sample collection end date	GENEPIO:0101071	The date on which sample collection ended for a continuous sample.	Provide the date that sample collection ended in ISO 8601 format i.e. YYYY-MM-DD	2020-03-18				1.0.0	1.0.0	1.0.0	WastewaterSARS-CoV-2;WastewaterAMR;WastewaterPathogenAgnostic
Sample collection and processing	sample processing date	GENEPIO:0100763	The date on which the sample was processed.	Provide the sample processed date in ISO 8601 format, i.e. "YYYY-MM-DD". The sample may be collected and processed (e.g. filtered, extraction) on the same day, or on different dates.	2020-03-16				1.0.0	1.0.0	1.0.0	WastewaterSARS-CoV-2;WastewaterAMR;WastewaterPathogenAgnostic
Sample collection and processing	sample collection start time	GENEPIO:0101072	The time at which sample collection began.	Provide this time in ISO 8601 24hr format, in your local time.	17:15 PST				1.0.0	1.0.0	1.0.0	WastewaterSARS-CoV-2;WastewaterAMR;WastewaterPathogenAgnostic
Sample collection and processing	sample collection end time	GENEPIO:0101073	The time at which sample collection ended.	Provide this time in ISO 8601 24hr format, in your local time.	19:15 PST				1.0.0	1.0.0	1.0.0	WastewaterSARS-CoV-2;WastewaterAMR;WastewaterPathogenAgnostic
Sample collection and processing	sample collection time of day	GENEPIO:0100765	The descriptive time of day during which the sample was collected.	If known, select a value from the pick list. The time of sample processing matters especially for grab samples, as fecal concentration in wastewater fluctuates over the course of the day.	Morning				1.0.0	1.0.0	1.0.0	WastewaterSARS-CoV-2;WastewaterAMR;WastewaterPathogenAgnostic
Sample collection and processing	sample collection time duration value	GENEPIO:0100766	The amount of time over which the sample was collected.	Provide the numerical value of time.	4				1.0.0	1.0.0	1.0.0	WastewaterSARS-CoV-2;WastewaterAMR;WastewaterPathogenAgnostic
Sample collection and processing	sample collection time duration unit	GENEPIO:0100767	The units of the time duration measurement of sample collection.	Provide the units from the pick list.	Hour				1.0.0	1.0.0	1.0.0	WastewaterSARS-CoV-2;WastewaterAMR;WastewaterPathogenAgnostic
Sample collection and processing	presampling activity	GENEPIO:0100433	The activities or variables upstream of sample collection that may affect the sample.	If there was an activity that would affect the sample prior to collection (this is different than sample processing), provide the activities by selecting one or more values from the template pick list. If the information is unknown or cannot be provided, leave blank or provide a null value.	Agricultural activity				1.0.0	1.0.0	1.0.0	WastewaterSARS-CoV-2;WastewaterAMR;WastewaterPathogenAgnostic
Sample collection and processing	presampling activity details	GENEPIO:0100434	The details of the activities or variables that affected the sample collected.	Briefly describe the presampling activities using free text.	Agricultural waste from large farm contributes waste to the site sampled.				1.0.0	1.0.0	1.0.0	WastewaterSARS-CoV-2;WastewaterAMR;WastewaterPathogenAgnostic
Sample collection and processing	sample volume measurement value	GENEPIO:0100768	The numerical value of the volume measurement of the sample collected.	Provide the numerical value of volume.	5				1.0.0	1.0.0	1.0.0	WastewaterSARS-CoV-2;WastewaterAMR;WastewaterPathogenAgnostic
Sample collection and processing	sample volume measurement unit	GENEPIO:0100769	The units of the volume measurement of the sample collected.	Provide the units from the pick list.	mL				1.0.0	1.0.0	1.0.0	WastewaterSARS-CoV-2;WastewaterAMR;WastewaterPathogenAgnostic
Sample collection and processing	sample storage method	GENEPIO:0100448	The process used to store the sample.	The sample was placed in a tube in a cooler bag during transportation (~3 hours) to the lab site. At this point the sample was placed in storage medium and put in a -100C freezer until it was processed and extracted 5 days later.					1.0.0	1.0.0	1.0.0	WastewaterSARS-CoV-2;WastewaterAMR;WastewaterPathogenAgnostic
Sample collection and processing	sample storage medium	GENEPIO:0100449	The medium in which a sample is stored.	Provide the name of the transport medium or storage medium used for this sample. If none was used, leave blank or write "None".	Cary-Blair transport medium				1.0.0	1.0.0	1.0.0	WastewaterSARS-CoV-2;WastewaterAMR;WastewaterPathogenAgnostic
Sample collection and processing	sample storage duration value	GENEPIO:0101014	The numerical value of the time measurement during which a sample is in storage.	Provide the numerical value of time.	5				1.0.0	1.0.0	1.0.0	WastewaterSARS-CoV-2;WastewaterAMR;WastewaterPathogenAgnostic
Sample collection and processing	sample storage duration unit	GENEPIO:0101015	The units of a measured sample storage duration.	Provide the units from the pick list.	Day				1.0.0	1.0.0	1.0.0	WastewaterSARS-CoV-2;WastewaterAMR;WastewaterPathogenAgnostic
Sample collection and processing	specimen processing	GENEPIO:0001253	Any processing applied to the sample during or after receiving the sample.	Select processes from the picklist that were applied to this sample.	Centrifugation				1.0.0	1.0.0	1.0.0	WastewaterSARS-CoV-2;WastewaterAMR;WastewaterPathogenAgnostic
Sample collection and processing	specimen processing details	GENEPIO:0100311	The details of the processing applied to the sample during or after receiving the sample.	Briefly describe the processes applied to the sample.	25 samples were pooled and further prepared as a single sample during library prep.				1.0.0	1.0.0	1.0.0	WastewaterSARS-CoV-2;WastewaterAMR;WastewaterPathogenAgnostic

Sample collection and processing	experimental protocol name	GENEPIO:0101029	The name of the overarching experimental methodology that was used to process the biomaterial.	Provide the name of the methodology used in your study. If available, provide a url link to the protocol.				1.0.0	1.0.0	1.0.0	WastewaterSARS-CoV-2;WastewaterAMR;WastewaterPathogenAgnostic		
Sample collection and processing	experimental protocol url	GENEPIO:0102071		Provide a url link to the protocol.				4.2.2	4.2.2	4.2.2	WastewaterSARS-CoV-2;WastewaterAMR;WastewaterPathogenAgnostic		
Sample collection and processing	environmental site	GENEPIO:0001232	An environmental location may describe a site in the natural or built environment e.g. contact surface, metal can, hospital, wet market, bat cave.	Provide a descriptor of the environmental site sampled. Use the picklist provided in the template. If not applicable, choose a null value.	Meat processing plant			1.0.0	1.0.0	1.0.0	WastewaterSARS-CoV-2;WastewaterAMR;WastewaterPathogenAgnostic		
Sample collection and processing	proximal environmental site	GENEPIO:0101205	An environmental location in the natural or built environment, that is proximal to a sampling location and which can impact a sample.	Provide a descriptor of the environmental site close to the sampling site. Use the picklist provided in the template. If not applicable, choose a null value.	Farm			3.1.1	3.1.1	3.1.1	WastewaterSARS-CoV-2;WastewaterAMR;WastewaterPathogenAgnostic		
Sample collection and processing	environmental material	GENEPIO:0001223	A substance obtained from the natural or man-made environment e.g. soil, water, sewage.	Provide a descriptor of the environmental material sampled. Use the picklist provided in the template. If not applicable, choose a null value.	Raw wastewater			1.0.0	1.0.0	1.0.0	WastewaterSARS-CoV-2;WastewaterAMR;WastewaterPathogenAgnostic		
Sample collection and processing	environmental material properties	GENEPIO:0100770	The properties, characteristics and qualities of a substance obtained from the natural or man-made environment.	Provide the environmental material properties by selecting descriptors from the pick list.	Stagnant			1.0.0	1.0.0	1.0.0	WastewaterSARS-CoV-2;WastewaterAMR;WastewaterPathogenAgnostic		
Sample collection and processing	wastewater system type	GENEPIO:0100771	The type or classification of a wastewater system e.g. sanitary sewer, combined sewer, latrine	Provide the classification of the wastewater system by selecting from the provided pick list.	Sanitary sewer			1.0.0	1.0.0	1.0.0	WastewaterSARS-CoV-2;WastewaterAMR;WastewaterPathogenAgnostic		
Sample collection and processing	experimental specimen role type	GENEPIO:0100921	The type of role that the sample represents in the experiment.	Samples can play different types of roles in experiments. A sample under study in one experiment may act as a control or be a replicate of another sample in another experiment. This field is used to distinguish samples under study from controls, replicates, etc. If the sample acted as an experimental control or a replicate, select a role type from the picklist. If the sample was not a control, leave blank or select "Not Applicable".	Positive experimental control			1.0.0	1.0.0	1.0.0	WastewaterSARS-CoV-2;WastewaterAMR;WastewaterPathogenAgnostic		
Sample collection and processing	experimental control details	GENEPIO:0100922	The details regarding the experimental control contained in the sample.	Provide details regarding the nature of the reference strain used as a control, or what was used to monitor.	Human coronavirus 229E (HCoV-229E) spiked in sample as process control			1.0.0	1.0.0	1.0.0	WastewaterSARS-CoV-2;WastewaterAMR;WastewaterPathogenAgnostic		
Sample collection and processing	collection device	GENEPIO:0001234	The instrument or container used to collect the sample e.g. grab sampler.	Provide a descriptor of the device used for sampling. Use the picklist provided in the template. If not applicable, choose a null value.	Automatic flow-proportional sampler			1.0.0	1.0.0	1.0.0	WastewaterSARS-CoV-2;WastewaterAMR;WastewaterPathogenAgnostic		
Sample collection and processing	collection method	GENEPIO:0001241	The process used to collect the sample.	Provide a descriptor of the collection method used for sampling. Use the picklist provided in the template. If not applicable, choose a null value.	Automatic composite sampling			1.0.0	1.0.0	1.0.0	WastewaterSARS-CoV-2;WastewaterAMR;WastewaterPathogenAgnostic		
Sample collection and processing	nucleic acid extraction method	GENEPIO:0100939	The process used to extract genomic material from a sample.	Briefly describe the extraction method used.	Direct wastewater RNA capture and purification via the "Sewage, Salt, Silica and SARS-CoV-2 (4S)" method v4 found at https://www.protocols.io/view/v-4-direct-wastewater-ma-capture-and-purification-36wvg581ygh5v4			1.0.0	1.0.0	1.0.0	WastewaterSARS-CoV-2;WastewaterAMR;WastewaterPathogenAgnostic		
Sample collection and processing	nucleic acid extraction kit	GENEPIO:0100772	The kit used to extract genomic material from a sample	Provide the name of the genomic extraction kit used.	QIAamp PowerFecal Pro DNA Kit			1.0.0	1.0.0	1.0.0	WastewaterSARS-CoV-2;WastewaterAMR;WastewaterPathogenAgnostic		
Sample collection and processing	endogenous control details	GENEPIO:0100923	The description of the endogenous controls included when extracting a sample	Provide the names of endogenous controls that were used as a reference during extraction. If relevant, include titers of these controls, as well as whether any controls were expected but not identified in the sample.				1.0.0	1.0.0	1.0.0	WastewaterSARS-CoV-2;WastewaterAMR;WastewaterPathogenAgnostic		
Sample collection and processing	extraction recovery efficiency measurement value	GENEPIO:0100924	The recovery efficiency of an extraction, calculated as the amount of a synthetic or endogenous compound identified in the sample relative to the amount expected.	Provide value as a percent.				1.0.0	1.0.0	1.0.0	WastewaterSARS-CoV-2;WastewaterAMR;WastewaterPathogenAgnostic		
Sample collection and processing	extraction recovery efficiency measurement method	GENEPIO:0100925	The method by which recovery efficiency of an extraction was calculated.	Provide a brief description of how extraction recovery efficiency was measured or estimated.				1.0.0	1.0.0	1.0.0	WastewaterSARS-CoV-2;WastewaterAMR;WastewaterPathogenAgnostic		
Strain and isolation information											WastewaterPathogenAgnostic		
Strain and isolation information	microbiological method	GENEPIO:0100454	The laboratory method used to grow, prepare, and/or isolate the microbial isolate.	Provide the name and version number of the microbiological method. The ID of the method is also acceptable if the ID can be linked to the laboratory that created the procedure.	MFHPB-30			1.0.0	1.0.0	1.0.0	WastewaterPathogenAgnostic		
Strain and isolation information	strain	GENEPIO:0100455	The strain identifier.	If the isolate represents or is derived from, a lab reference strain or strain from a type culture collection, provide the strain identifier.	K12			1.0.0	1.0.0	1.0.0	WastewaterPathogenAgnostic		
Strain and isolation information	isolate ID	GENEPIO:0100456	The user-defined identifier for the isolate, as provided by the laboratory that originally isolated the isolate.	Provide the isolate_ID created by the lab that first isolated the isolate (i.e. the original isolate ID). If the information is unknown or cannot be provided, leave blank or provide a null value. If only an alternate isolate ID is known (e.g. the ID from your lab, if your lab did not isolate the isolate from the original sample), make sure to include it in the alternative_isolate_ID field.	SA20131043			1.0.0	1.0.0	1.0.0	WastewaterPathogenAgnostic		
Strain and isolation information	alternative isolate ID	GENEPIO:0100457	An alternative isolate_ID assigned to the isolate by another organization.	Alternative isolate IDs should be provided in the in a prescribed format which consists of the ID followed by square brackets (no space in between the ID and brackets) containing the short form of ID provider's agency name i.e. ID[short organization code]. An example of a properly formatted alternative_isolate_identifier would be e.g. XYZ4567[CFIA]. Multiple alternative isolate IDs can be provided, separated by semi-colons.	GHIF3456[PHAC]; QWICK222[CFIA]			1.0.0	1.0.0	1.0.0	WastewaterPathogenAgnostic		
Strain and isolation information	progeny isolate ID	GENEPIO:0100458	The identifier assigned to a progenitor isolate derived from an isolate that was directly obtained from a sample.	If your sequence data pertains to progeny of an original isolate, provide the progeny_isolate_ID.	SUB_ON_1526			1.0.0	1.0.0	1.0.0	WastewaterPathogenAgnostic		
Strain and isolation information	isolated by	GENEPIO:0100461	The name of the agency, organization or institution with which the individual who performed the isolation procedure is affiliated.	Provide the name of the agency, organization or institution that isolated the original isolate in full (avoid abbreviations). If the information is unknown or cannot be provided, leave blank or provide a null value.	Public Health Agency of Canada (PHAC) [GENEPIO:0100551]			1.0.0	1.0.0	1.0.0	WastewaterPathogenAgnostic		
Strain and isolation information	isolated by laboratory name	GENEPIO:0100462	The specific laboratory affiliation of the individual who performed the isolation procedure.	Provide the name of the specific laboratory that that isolated the original isolate (avoid abbreviations). If the information is unknown or cannot be provided, leave blank or provide a null value.	Topp Lab			1.0.0	1.0.0	1.0.0	WastewaterPathogenAgnostic		
Strain and isolation information	isolated by contact name	GENEPIO:0100463	The name or title of the contact responsible for follow-up regarding the isolate.	Provide the name of an individual or their job title. As personnel turnover may render the contact's name obsolete, it is preferable to provide a job title for ensuring accuracy of information and institutional memory. If the information is unknown or cannot be provided, leave blank or provide a null value.	Enterics Lab Manager			1.0.0	1.0.0	1.0.0	WastewaterPathogenAgnostic		

Strain and isolation information	isolated by contact email	GENEPIO:0100464	The email address of the contact responsible for follow-up regarding the isolate.	Provide the email associated with the listed contact. As personnel turnover may render an individual's email obsolete, it is more preferable to provide an address for a position or lab, to ensure accuracy of information and institutional memory. If the information is unknown or cannot be provided, leave blank or provide a null value.	enterics@lab.ca				1.0.0	1.0.0	1.0.0	WastewaterPathogenAgnostic				
Strain and isolation information	isolation date	GENEPIO:0100465	The date on which the isolate was isolated from a sample.	Provide the date according to the ISO 8601 standard "YYYY-MM-DD", "YYYY-MM" or "YYYY".	2020-10-30				1.0.0	1.0.0	1.0.0	WastewaterPathogenAgnostic				
Strain and isolation information	isolate received date	GENEPIO:0100466	The date on which the isolate was received by the laboratory.	Provide the date according to the ISO 8601 standard "YYYY-MM-DD", "YYYY-MM" or "YYYY".	2020-11-15				1.0.0	1.0.0	1.0.0	WastewaterPathogenAgnostic				
Strain and isolation information	serovar	GENEPIO:0100467	The serovar of the organism.	Only include this information if it has been determined by traditional serological methods or a validated in silico prediction tool e.g. SISTR.	Heidelberg				1.0.0	1.0.0	1.0.0	WastewaterPathogenAgnostic				
Strain and isolation information	serotyping method	GENEPIO:0100468	The method used to determine the serovar.	If the serovar was determined via traditional serotyping methods, put "Traditional serotyping". If the serovar was determined via in silico methods, provide the name and version number of the software.	SISTR 1.0.1				1.0.0	1.0.0	1.0.0	WastewaterPathogenAgnostic				
Strain and isolation information	phagetype	GENEPIO:0100469	The phagetype of the organism.	Provide if known. If unknown, put "missing".	47				1.0.0	1.0.0	1.0.0	WastewaterPathogenAgnostic				
Environmental conditions and measurements													WastewaterSARS-CoV-2;WastewaterAMR;WastewaterPathogenAgnostic			
Environmental conditions and measurements	water catchment area human population measurement value	GENEPIO:0100773	The numerical value of the human population measurement that contributes to the composition of water in a catchment area.	Where known, provide the numerical value of population size. I.e. the number of people.	10,500				1.0.0	1.0.0	1.0.0	WastewaterSARS-CoV-2;WastewaterAMR;WastewaterPathogenAgnostic				
Environmental conditions and measurements	water catchment area human population range	GENEPIO:0100774	The human population range of the water catchment that contributes effluent to a wastewater site.	Where catchment population is not well known, provide an estimation of population size by selecting a value from the picklist.	1,000 - 10,000 people				1.0.0	1.0.0	1.0.0	WastewaterSARS-CoV-2;WastewaterAMR;WastewaterPathogenAgnostic				
Environmental conditions and measurements	water catchment area human population measurement method	GENEPIO:0100775	The method by which a water catchment's human population size was measured or estimated.	Provide a brief description of how catchment population size was measured or estimated.	population of jurisdiction encompassing the wastewater service area				1.0.0	1.0.0	1.0.0	WastewaterSARS-CoV-2;WastewaterAMR;WastewaterPathogenAgnostic				
Environmental conditions and measurements	water catchment area human population density value	GENEPIO:0100776	The numerical value describing the number of humans per geographical area in a water catchment.	Provide the numerical value of the population density in the catchment area.	4				1.0.0	1.0.0	1.0.0	WastewaterSARS-CoV-2;WastewaterAMR;WastewaterPathogenAgnostic				
Environmental conditions and measurements	water catchment area human population density unit	GENEPIO:0100777	The unit describing the number of humans per geographical area in a water catchment.	Provide the unit of the population density in the catchment area.	persons per Km^2				1.0.0	1.0.0	1.0.0	WastewaterSARS-CoV-2;WastewaterAMR;WastewaterPathogenAgnostic				
Environmental conditions and measurements	populated area type	GENEPIO:0100778	A type of area that is populated by humans to different degrees.	Provide the populated area type from the pick list.	Urban area				1.0.0	1.0.0	1.0.0	WastewaterSARS-CoV-2;WastewaterAMR;WastewaterPathogenAgnostic				
Environmental conditions and measurements	sampling weather conditions	GENEPIO:0100779	The state of the atmosphere at a place and time as regards heat, dryness, sunshine, wind, rain, etc.	Provide the weather conditions at the time of sample collection.	Rain				1.0.0	1.0.0	1.0.0	WastewaterSARS-CoV-2;WastewaterAMR;WastewaterPathogenAgnostic				
Environmental conditions and measurements	presampling weather conditions	GENEPIO:0100780	Weather conditions prior to collection that may affect the sample.	Provide the weather conditions prior to sample collection.	Drizzle				1.0.0	1.0.0	1.0.0	WastewaterSARS-CoV-2;WastewaterAMR;WastewaterPathogenAgnostic				
Environmental conditions and measurements	precipitation measurement value	GENEPIO:0100911	The amount of water which has fallen during a precipitation process.	Provide the quantity of precipitation in the area leading up to the time of sample collection.	12				1.0.0	1.0.0	1.0.0	WastewaterSARS-CoV-2;WastewaterAMR;WastewaterPathogenAgnostic				
Environmental conditions and measurements	precipitation measurement unit	GENEPIO:0100912	The units of measurement for the amount of water which has fallen during a precipitation process.	Provide the units of precipitation by selecting a value from the pick list.	inch				1.0.0	1.0.0	1.0.0	WastewaterSARS-CoV-2;WastewaterAMR;WastewaterPathogenAgnostic				
Environmental conditions and measurements	precipitation measurement method	GENEPIO:0100913	The process used to measure the amount of water which has fallen during a precipitation process.	Provide the name of the procedure or method used to measure precipitation.	Rain gauge over a 12 hour period prior to sample collection				1.0.0	1.0.0	1.0.0	WastewaterSARS-CoV-2;WastewaterAMR;WastewaterPathogenAgnostic				
Environmental conditions and measurements	ambient temperature measurement value	GENEPIO:0100935	The numerical value of a measurement of the ambient temperature.	Provide the numerical value of the measured temperature.	70				1.0.0	1.0.0	1.0.0	WastewaterSARS-CoV-2;WastewaterAMR;WastewaterPathogenAgnostic				
Environmental conditions and measurements	ambient temperature measurement unit	GENEPIO:0100936	The units of a measurement of the ambient temperature.	Provide the units of the measured temperature.	degree Celsius (C)				1.0.0	1.0.0	1.0.0	WastewaterSARS-CoV-2;WastewaterAMR;WastewaterPathogenAgnostic				
Environmental conditions and measurements	pH measurement value	GENEPIO:0001736	The measured pH value indicating the acidity or basicity(alkalinity) of an aqueous solution.	Provide the numerical value of the measured pH.	7.4				1.0.0	1.0.0	1.0.0	WastewaterSARS-CoV-2;WastewaterAMR;WastewaterPathogenAgnostic				
Environmental conditions and measurements	pH measurement method	GENEPIO:0100781	The process used to measure pH value.	Provide the name of the procedure or technology used to measure pH.	pH test strip (litmus test)				1.0.0	1.0.0	1.0.0	WastewaterSARS-CoV-2;WastewaterAMR;WastewaterPathogenAgnostic				
Environmental conditions and measurements	total daily flow rate measurement value	GENEPIO:0100905	The numerical value of a measured fluid flow rate over the course of a day.	Provide the numerical value of the measured flow rate.	10				1.0.0	1.0.0	1.0.0	WastewaterSARS-CoV-2;WastewaterAMR;WastewaterPathogenAgnostic				
Environmental conditions and measurements	total daily flow rate measurement unit	GENEPIO:0100906	The units of a measured fluid flow rate over the course of a day.	Provide the units of the measured flow rate by selecting a value from the pick list.	million gallons per day (MGD)				1.0.0	1.0.0	1.0.0	WastewaterSARS-CoV-2;WastewaterAMR;WastewaterPathogenAgnostic				
Environmental conditions and measurements	total daily flow rate measurement method	GENEPIO:0100907	The process used to measure total daily flow rate.	Provide the name of the procedure or technology used to measure flow rate.	Flow meter				1.0.0	1.0.0	1.0.0	WastewaterSARS-CoV-2;WastewaterAMR;WastewaterPathogenAgnostic				
Environmental conditions and measurements	instantaneous flow rate measurement value	GENEPIO:0100908	The numerical value of a measured instantaneous flow rate.	Provide the numerical value of the measured flow rate.	25				1.0.0	1.0.0	1.0.0	WastewaterSARS-CoV-2;WastewaterAMR;WastewaterPathogenAgnostic				
Environmental conditions and measurements	instantaneous flow rate measurement unit	GENEPIO:0100909	The units of a measured instantaneous flow rate.	Provide the units of the measured flow rate by selecting a value from the pick list.	cubic meter per hour (m³/h)				1.0.0	1.0.0	1.0.0	WastewaterSARS-CoV-2;WastewaterAMR;WastewaterPathogenAgnostic				
Environmental conditions and measurements	instantaneous flow rate measurement method	GENEPIO:0100910	The process used to measure instantaneous flow rate.	Provide the name of the procedure or technology used to measure flow rate.	Flow meter				1.0.0	1.0.0	1.0.0	WastewaterSARS-CoV-2;WastewaterAMR;WastewaterPathogenAgnostic				
Environmental conditions and measurements	turbidity measurement value	GENEPIO:0100783	The numerical value of a measurement of turbidity.	Provide the numerical value of the measured turbidity.	0.02				1.0.0	1.0.0	1.0.0	WastewaterSARS-CoV-2;WastewaterAMR;WastewaterPathogenAgnostic				
Environmental conditions and measurements	turbidity measurement unit	GENEPIO:0100914	The units of a measurement of turbidity.	Provide the units of the measured turbidity by selecting a value from the pick list.	nephelometric turbidity unit (NTU)				1.0.0	1.0.0	1.0.0	WastewaterSARS-CoV-2;WastewaterAMR;WastewaterPathogenAgnostic				
Environmental conditions and measurements	turbidity measurement method	GENEPIO:0101013	The process used to measure turbidity.	Provide the name of the procedure or technology used to measure turbidity.	Nephelometric method				1.0.0	1.0.0	1.0.0	WastewaterSARS-CoV-2;WastewaterAMR;WastewaterPathogenAgnostic				
Environmental conditions and measurements	dissolved oxygen measurement value	GENEPIO:0000035	The numerical value of a measurement of dissolved oxygen.	Provide the numerical value of the measured dissolved oxygen.	5				1.0.0	1.0.0	1.0.0	WastewaterSARS-CoV-2;WastewaterAMR;WastewaterPathogenAgnostic				
Environmental conditions and measurements	dissolved oxygen measurement unit	GENEPIO:0100784	The units of a measurement of dissolved oxygen.	Provide the units of the measured dissolved oxygen by selecting a value from the pick list.	part per million (ppm)				1.0.0	1.0.0	1.0.0	WastewaterSARS-CoV-2;WastewaterAMR;WastewaterPathogenAgnostic				
Environmental conditions and measurements	dissolved oxygen measurement method	GENEPIO:0100785	The method used to measure dissolved oxygen.	Provide the name of the procedure or technology used to measure dissolved oxygen.	Dissolved oxygen meter in vertical direction				1.0.0	1.0.0	1.0.0	WastewaterSARS-CoV-2;WastewaterAMR;WastewaterPathogenAgnostic				
Environmental conditions and measurements	oxygen reduction potential (ORP) measurement value	FIX:0000278	The numerical value of a measurement of oxygen reduction potential (ORP).	Provide the numerical value of the measured oxygen reduction potential.	-50				1.0.0	1.0.0	1.0.0	WastewaterSARS-CoV-2;WastewaterAMR;WastewaterPathogenAgnostic				
Environmental conditions and measurements	oxygen reduction potential (ORP) measurement method	GENEPIO:0100786	The units of a measurement of oxygen reduction potential (ORP).	Provide the units of the measured oxygen reduction potential by selecting a value from the pick list.	milliVolt (mV)				1.0.0	1.0.0	1.0.0	WastewaterSARS-CoV-2;WastewaterAMR;WastewaterPathogenAgnostic				
Environmental conditions and measurements	oxygen reduction potential (ORP) measurement method	GENEPIO:0100787	The method used to measure oxygen reduction potential (ORP).	Provide the name of the procedure or technology used to measure oxygen reduction potential.	ORP sensor				1.0.0	1.0.0	1.0.0	WastewaterSARS-CoV-2;WastewaterAMR;WastewaterPathogenAgnostic				
Environmental conditions and measurements	chemical oxygen demand (COD) measurement value	GENEPIO:0100788	The measured value from a chemical oxygen demand (COD) test.	Provide the numerical value of the COD test result.	26				1.0.0	1.0.0	1.0.0	WastewaterSARS-CoV-2;WastewaterAMR;WastewaterPathogenAgnostic				
Environmental conditions and measurements	chemical oxygen demand (COD) measurement method	GENEPIO:0100789	The units associated with a value from a chemical oxygen demand (COD) test.	Provide the units of the COD test result.	milligram per liter (mg/L)				1.0.0	1.0.0	1.0.0	WastewaterSARS-CoV-2;WastewaterAMR;WastewaterPathogenAgnostic				
Environmental conditions and measurements	chemical oxygen demand (COD) measurement method	GENEPIO:0100790	The method used to measure chemical oxygen demand (COD).	Provide the name of the procedure or technology used to measure COD.	Hach LCK test kit				1.0.0	1.0.0	1.0.0	WastewaterSARS-CoV-2;WastewaterAMR;WastewaterPathogenAgnostic				

Environmental conditions and measurements	carbonaceous biochemical oxygen demand (CBOD) measurement value	GENEPIO-0100791	The numerical value of a measurement of carbonaceous biochemical oxygen demand (CBOD).	Provide the numerical value of the measured CBOD.	20		1.0	1.0	1.0	WastewaterSARS-CoV-2:WastewaterAMR:WastewaterPathogenAgnostic
Environmental conditions and measurements	carbonaceous biochemical oxygen demand (CBOD) measurement unit	GENEPIO-0100792	The units of a measurement of carbonaceous biochemical oxygen demand (CBOD).	Provide the units of the measured CBOD by selecting a value from the pick list.	milligram per liter (mg/L)		1.0	1.0	1.0	WastewaterSARS-CoV-2:WastewaterAMR:WastewaterPathogenAgnostic
Environmental conditions and measurements	carbonaceous biochemical oxygen demand (CBOD) measurement method	GENEPIO-0100793	The method used to measure carbonaceous biochemical oxygen demand (CBOD).	Provide the name of the procedure or technology used to measure CBOD.	CBOD measurement by optical probe		1.0	1.0	1.0	WastewaterSARS-CoV-2:WastewaterAMR:WastewaterPathogenAgnostic
Environmental conditions and measurements	total suspended solids (TSS) measurement value	GENEPIO-0100794	The numerical value from a total suspended solids (TSS) test.	Provide the numerical value of the measured TSS.	8		1.0	1.0	1.0	WastewaterSARS-CoV-2:WastewaterAMR:WastewaterPathogenAgnostic
Environmental conditions and measurements	total suspended solids (TSS) measurement unit	GENEPIO-0100795	The units associated with a value from a total suspended solids (TSS) test.	Provide the units of the measured TSS.	percent (%)		1.0	1.0	1.0	WastewaterSARS-CoV-2:WastewaterAMR:WastewaterPathogenAgnostic
Environmental conditions and measurements	total suspended solids (TSS) measurement method	GENEPIO-0100796	The method used to measure total suspended solids (TSS).	Provide the name of the procedure or technology used to measure TSS.	Vacuum filter through a 2-micron filter, then oven-dried and weighed sample		1.0	1.0	1.0	WastewaterSARS-CoV-2:WastewaterAMR:WastewaterPathogenAgnostic
Environmental conditions and measurements	total dissolved solids (TDS) measurement value	GENEPIO-0100797	The numerical value from a total dissolved solids (TDS) test.	Provide the numerical value of the measured TDS.	2		1.0	1.0	1.0	WastewaterSARS-CoV-2:WastewaterAMR:WastewaterPathogenAgnostic
Environmental conditions and measurements	total dissolved solids (TDS) measurement unit	GENEPIO-0100798	The units associated with a value from a total dissolved solids (TDS) test.	Provide the units of the measured TDS.	percent (%)		1.0	1.0	1.0	WastewaterSARS-CoV-2:WastewaterAMR:WastewaterPathogenAgnostic
Environmental conditions and measurements	total dissolved solids (TDS) measurement method	GENEPIO-0100799	The method used to measure total dissolved solids (TDS).	Provide the name of the procedure or technology used to measure TDS.	Subtract calculated TSS from calculated TS		1.0	1.0	1.0	WastewaterSARS-CoV-2:WastewaterAMR:WastewaterPathogenAgnostic
Environmental conditions and measurements	total solids (TS) measurement value	GENEPIO-0100800	The numerical value from a total solids (TS) test.	Provide the numerical value of the measured TS.	10		1.0	1.0	1.0	WastewaterSARS-CoV-2:WastewaterAMR:WastewaterPathogenAgnostic
Environmental conditions and measurements	total solids (TS) measurement unit	GENEPIO-0100801	The units associated with a value from a total solids (TS) test.	Provide the units of the measured TS.	percent (%)		1.0	1.0	1.0	WastewaterSARS-CoV-2:WastewaterAMR:WastewaterPathogenAgnostic
Environmental conditions and measurements	total solids (TS) measurement method	GENEPIO-0100802	The method used to measure total solids (TS).	Provide the name of the procedure or technology used to measure TS.	Gravimetric method by oven drying, then weighing		1.0	1.0	1.0	WastewaterSARS-CoV-2:WastewaterAMR:WastewaterPathogenAgnostic
Environmental conditions and measurements	alkalinity measurement value	GENEPIO-0100808	The numerical value of a measurement of alkalinity.	Provide the numerical value of the measured alkalinity.	3		1.0	1.0	1.0	WastewaterSARS-CoV-2:WastewaterAMR:WastewaterPathogenAgnostic
Environmental conditions and measurements	alkalinity measurement unit	GENEPIO-0100879	The units of a measurement of alkalinity.	Provide the units of the measured alkalinity.	milligram per liter of calcium carbonate (mg/L CaCO3)		1.0	1.0	1.0	WastewaterSARS-CoV-2:WastewaterAMR:WastewaterPathogenAgnostic
Environmental conditions and measurements	alkalinity measurement method	GENEPIO-0100880	The process used to measure alkalinity.	Provide the name of the procedure or technology used to measure alkalinity.	Titration method		1.0	1.0	1.0	WastewaterSARS-CoV-2:WastewaterAMR:WastewaterPathogenAgnostic
Environmental conditions and measurements	conductivity measurement value	GENEPIO-0100916	The numerical value of a measurement of conductivity.	Provide the numerical value of the measured conductivity.	1412		1.0	1.0	1.0	WastewaterSARS-CoV-2:WastewaterAMR:WastewaterPathogenAgnostic
Environmental conditions and measurements	conductivity measurement unit	GENEPIO-0100803	The units of a measurement of conductivity.	Provide the units of the measured conductivity.	microSiemen per centimeter (µS/cm)		1.0	1.0	1.0	WastewaterSARS-CoV-2:WastewaterAMR:WastewaterPathogenAgnostic
Environmental conditions and measurements	conductivity measurement method	GENEPIO-0100804	The method used to measure conductivity.	Provide the name of the procedure or technology used to measure conductivity.	Conductivity electrode and meter		1.0	1.0	1.0	WastewaterSARS-CoV-2:WastewaterAMR:WastewaterPathogenAgnostic
Environmental conditions and measurements	salinity measurement value	GENEPIO-0100805	The numerical value of a measurement of salinity.	Provide the numerical value of the measured salinity.	35		1.0	1.0	1.0	WastewaterSARS-CoV-2:WastewaterAMR:WastewaterPathogenAgnostic
Environmental conditions and measurements	salinity measurement unit	GENEPIO-0100806	The units of a measurement of salinity.	Provide the units of the measured salinity.	practical salinity unit (PSU)		1.0	1.0	1.0	WastewaterSARS-CoV-2:WastewaterAMR:WastewaterPathogenAgnostic
Environmental conditions and measurements	salinity measurement method	GENEPIO-0100807	The method used to measure salinity.	Provide the name of the procedure or technology used to measure salinity.	conductivity meter		1.0	1.0	1.0	WastewaterSARS-CoV-2:WastewaterAMR:WastewaterPathogenAgnostic
Environmental conditions and measurements	total nitrogen (TN) measurement value	GENEPIO-0100808	The numerical value of a measurement of total nitrogen (TN).	Provide the numerical value of the measured TN.	120		1.0	1.0	1.0	WastewaterSARS-CoV-2:WastewaterAMR:WastewaterPathogenAgnostic
Environmental conditions and measurements	total nitrogen (TN) measurement unit	GENEPIO-0100809	The units of a measurement of total nitrogen (TN).	Provide the units of the measured TN.	milligram per liter (mg/L)		1.0	1.0	1.0	WastewaterSARS-CoV-2:WastewaterAMR:WastewaterPathogenAgnostic
Environmental conditions and measurements	total nitrogen (TN) measurement method	GENEPIO-0100810	The method used to measure total nitrogen (TN).	Provide the name of the procedure or technology used to measure TN.	flach total nitrogen spectrophotometric test		1.0	1.0	1.0	WastewaterSARS-CoV-2:WastewaterAMR:WastewaterPathogenAgnostic
Environmental conditions and measurements	total phosphorus (TP) measurement value	GENEPIO-0100811	The numerical value of a measurement of total phosphorus (TP).	Provide the numerical value of the measured TP.	2		1.0	1.0	1.0	WastewaterSARS-CoV-2:WastewaterAMR:WastewaterPathogenAgnostic
Environmental conditions and measurements	total phosphorus (TP) measurement unit	GENEPIO-0100812	The units of a measurement of total phosphorus (TP).	Provide the units of the measured TP.	milligrams orthophosphate as phosphorus per liter (mg PO4-PL)		1.0	1.0	1.0	WastewaterSARS-CoV-2:WastewaterAMR:WastewaterPathogenAgnostic
Environmental conditions and measurements	total phosphorus (TP) measurement method	GENEPIO-0100813	The method used to measure total phosphorus (TP).	Provide the name of the procedure or technology used to measure TP.	Merck phosphate spectrophotometric test kit		1.0	1.0	1.0	WastewaterSARS-CoV-2:WastewaterAMR:WastewaterPathogenAgnostic
Environmental conditions and measurements	fecal contamination indicator	GENEPIO-0100814	A gene, virus, bacteria, or substance used to measure the sanitary quality of water in regards to fecal contamination.	If a fecal contamination indicator was measured, select it from the picklist.	crAssphage		1.0	1.0	1.0	WastewaterSARS-CoV-2:WastewaterAMR:WastewaterPathogenAgnostic
Environmental conditions and measurements	fecal contamination value	GENEPIO-0100815	The numerical value of a measurement of fecal contamination.	Provide the numerical value of the measured fecal contamination.	10		1.0	1.0	1.0	WastewaterSARS-CoV-2:WastewaterAMR:WastewaterPathogenAgnostic
Environmental conditions and measurements	fecal contamination unit	GENEPIO-0100816	The units of a measurement of fecal contamination.	Provide the units of the measured fecal contamination.	cycle threshold (Ct) / quantification cycle (Cq)		1.0	1.0	1.0	WastewaterSARS-CoV-2:WastewaterAMR:WastewaterPathogenAgnostic
Environmental conditions and measurements	fecal contamination method	GENEPIO-0100817	The method used to measure fecal contamination.	Provide the name of the procedure or technology used to measure fecal contamination.	quantitative PCR assay		1.0	1.0	1.0	WastewaterSARS-CoV-2:WastewaterAMR:WastewaterPathogenAgnostic
Environmental conditions and measurements	fecal coliform count value	GENEPIO-0100818	The numerical value of a measurement of fecal coliforms within a sample.	Provide the numerical value of the measured fecal coliforms.	3		1.0	1.0	1.0	WastewaterSARS-CoV-2:WastewaterAMR:WastewaterPathogenAgnostic
Environmental conditions and measurements	fecal coliform count unit	GENEPIO-0100819	The units of a measurement of fecal coliforms.	Provide the units of the measured fecal coliforms.	most probable number per milliliter (MPN/mL)		1.0	1.0	1.0	WastewaterSARS-CoV-2:WastewaterAMR:WastewaterPathogenAgnostic
Environmental conditions and measurements	fecal coliform count method	GENEPIO-0100820	The method used to measure fecal coliforms.	Provide the name of the procedure or technology used to measure fecal coliforms.	MPN method via serial dilutions until lack of growth		1.0	1.0	1.0	WastewaterSARS-CoV-2:WastewaterAMR:WastewaterPathogenAgnostic
Environmental conditions and measurements	urinary contamination indicator	GENEPIO-0100837	A gene, virus, bacteria, or substance used to measure the sanitary quality of water in regards to urinary contamination.	If a urinary contamination indicator was measured, select it from the picklist.	urobilin		1.0	1.0	1.0	WastewaterSARS-CoV-2:WastewaterAMR:WastewaterPathogenAgnostic
Environmental conditions and measurements	urinary contamination value	GENEPIO-0100838	The numerical value of a measurement of urinary contamination.	Provide the numerical value of the measured urinary contamination.	3		1.0	1.0	1.0	WastewaterSARS-CoV-2:WastewaterAMR:WastewaterPathogenAgnostic
Environmental conditions and measurements	urinary contamination unit	GENEPIO-0100839	The units of a measurement of urinary contamination.	Provide the units of the measured urinary contamination.	nanograms per liter		1.0	1.0	1.0	WastewaterSARS-CoV-2:WastewaterAMR:WastewaterPathogenAgnostic
Environmental conditions and measurements	urinary contamination method	GENEPIO-0100840	The method used to measure urinary contamination.	Provide the name of the procedure or technology used to measure urinary contamination.	Urobilin Concentration Test		1.0	1.0	1.0	WastewaterSARS-CoV-2:WastewaterAMR:WastewaterPathogenAgnostic
Environmental conditions and measurements	sample temperature value (at collection)	GENEPIO-0100821	The numerical value of a measurement of temperature of a sample at collection.	Provide the numerical value of the measured temperature.	20		1.0	1.0	1.0	WastewaterSARS-CoV-2:WastewaterAMR:WastewaterPathogenAgnostic
Environmental conditions and measurements	sample temperature unit (at collection)	GENEPIO-0100822	The units of a measurement of temperature of a sample at the time of collection.	Provide the units of the measured temperature.	degree Celsius (C)		1.0	1.0	1.0	WastewaterSARS-CoV-2:WastewaterAMR:WastewaterPathogenAgnostic
Environmental conditions and measurements	sample temperature value (when received)	GENEPIO-0100823	The numerical value of a measurement of temperature of a sample upon receipt.	Provide the numerical value of the measured temperature.	22		1.0	1.0	1.0	WastewaterSARS-CoV-2:WastewaterAMR:WastewaterPathogenAgnostic
Environmental conditions and measurements	sample temperature unit (when received)	GENEPIO-0100824	The units of a measurement of temperature of a sample at the time upon receipt.	Provide the units of the measured temperature.	degree Celsius (C)		1.0	1.0	1.0	WastewaterSARS-CoV-2:WastewaterAMR:WastewaterPathogenAgnostic
Sequence information		GENEPIO-0001441								WastewaterSARS-CoV-2:WastewaterAMR:WastewaterPathogenAgnostic
			The reason why a sample was originally collected may differ from the reason why it was selected for sequencing. The reason a sample was sequenced may provide information about potential biases in sequencing strategy. Provide the purpose of sequencing from the picklist in the template. The reason for sample collection should be indicated in the "purpose of sampling" field.							
Sequence information	purpose of sequencing	GENEPIO-0001445	The reason that the sample was sequenced.	Travel-associated surveillance			2.0	2.0	2.0	WastewaterSARS-CoV-2:WastewaterAMR:WastewaterPathogenAgnostic

				Provide an expanded description of why the sample was sequenced using free text. The description may include the importance of the sequences for a particular public health investigation/surveillance activity/research question. Suggested standardized descriptions include: Assessing public health control measures, Determining early introductions and spread, Investigating airline-related exposures, Investigating remote regions, Investigating health care workers, Investigating schools/universities.							
Sequence information	purpose of sequencing details	GENEPIO:0001446	The description of why the sample was sequenced providing specific details.		Investigating schools/universities		2.0.0	2.0.0	2.0.0		WastewaterSARS-CoV-2;WastewaterAMR;WastewaterPathogenAgnostic
Sequence information	sequenced by	GENEPIO:0100416	The name of the agency, organization or institution responsible for sequencing the isolate's genome.	Provide the name of the agency, organization or institution that performed the sequencing in full (avoid abbreviations). If the information is unknown or cannot be provided, leave blank or provide a null value.	Public Health Agency of Canada (PHAC) [GENEPIO:0100551]		1.0.0	1.0.0	1.0.0		WastewaterSARS-CoV-2;WastewaterAMR;WastewaterPathogenAgnostic
Sequence information	sequenced by laboratory name	GENEPIO:0100470	The specific laboratory affiliation of the responsible for sequencing the isolate's genome.	Provide the name of the specific laboratory that that performed the sequencing in full (avoid abbreviations). If the information is unknown or cannot be provided, leave blank or provide a null value.	Topp Lab		3.1.1	3.1.1	3.1.1		WastewaterSARS-CoV-2;WastewaterAMR;WastewaterPathogenAgnostic
Sequence information	sequenced by contact name	GENEPIO:0100471	The name or title of the contact responsible for follow-up regarding the sequence.	Provide the name of an individual or their job title. As personnel turnover may render the contact's name obsolete, it is more preferable to provide a job title for ensuring accuracy of information and institutional memory. If the information is unknown or cannot be provided, leave blank or provide a null value.	Joe Bloggs, Enterics Lab Manager		1.0.0	1.0.0	1.0.0		WastewaterSARS-CoV-2;WastewaterAMR;WastewaterPathogenAgnostic
Sequence information	sequenced by contact email	GENEPIO:0100471	The email address of the contact responsible for follow-up regarding the sequence.	Provide the email associated with the listed contact. As personnel turnover may render an individual's email obsolete, it is more preferable to provide an address for a position or lab, to ensure accuracy of information and institutional memory. If the information is unknown or cannot be provided, leave blank or provide a null value.	enterics@lab.ca		1.0.0	1.0.0	1.0.0		WastewaterSARS-CoV-2;WastewaterAMR;WastewaterPathogenAgnostic
Sequence information	sequence submitted by	GENEPIO:0001159	The name of the agency that submitted the sequence to a database.	The name of the agency should be written out in full, (with minor exceptions) and be consistent across multiple submissions. For Canadian institutions submitting specimens rather than sequencing data, please put the "National Microbiology Laboratory (NML)".	Public Health Ontario (PHO)		1.0.0	1.0.0	1.0.0		WastewaterSARS-CoV-2;WastewaterAMR;WastewaterPathogenAgnostic
Sequence information	sequence submitter contact email	GENEPIO:0001165	The email address of the contact responsible for follow-up regarding the sequence.	The email address can represent a specific individual or laboratory.	Resplab@lab.ca		1.0.0	1.0.0	1.0.0		WastewaterSARS-CoV-2;WastewaterAMR;WastewaterPathogenAgnostic
Sequence information	sequencing date	GENEPIO:0001447	The date the sample was sequenced.	ISO 8601 standard "YYYY-MM-DD".	2020-06-22		1.0.0	1.0.0	1.0.0		WastewaterSARS-CoV-2;WastewaterAMR;WastewaterPathogenAgnostic
Sequence information	library ID	GENEPIO:0001448	The user-specified identifier for the library prepared for sequencing.	The library name should be unique, and can be an autogenerated ID from your LIMS, or modification of the isolate ID.	XYZ_123345		1.0.0	1.0.0	1.0.0		WastewaterSARS-CoV-2;WastewaterAMR;WastewaterPathogenAgnostic
Sequence information	sequencing platform	GENEPIO:0100473	The platform technology used to perform the sequencing.	Provide the name of the company that created the sequencing instrument by selecting a value from the template pick list. If the information is unknown or cannot be provided, leave blank or provide a null value.	Illumina [GENEPIO:0001923]		1.0.0	1.0.0	1.0.0		WastewaterSARS-CoV-2;WastewaterAMR;WastewaterPathogenAgnostic
Sequence information	sequencing instrument	GENEPIO:0001452	The model of the sequencing instrument used.	Provide the model sequencing instrument by selecting a value from the template pick list. If the information is unknown or cannot be provided, leave blank or provide a null value.	Illumina HiSeq 2500 [GENEPIO:0100117]		1.0.0	1.0.0	1.0.0		WastewaterSARS-CoV-2;WastewaterAMR;WastewaterPathogenAgnostic
Sequence information	sequencing assay type	GENEPIO:0100997	The overarching sequencing methodology that was used to determine the sequence of a biomaterial.	Provide the name of the DNA or RNA sequencing technology used in your study. If unsure refer to the protocol documentation, or provide a null value.	whole genome sequencing assay		1.0.0	1.0.0	1.0.0		WastewaterSARS-CoV-2;WastewaterAMR;WastewaterPathogenAgnostic
Sequence information	library preparation kit	GENEPIO:0001450	The name of the DNA library preparation kit used to generate the library being sequenced.	Provide the name of the library preparation kit used.	Nextera XT		1.0.0	1.0.0	1.0.0		WastewaterSARS-CoV-2;WastewaterAMR;WastewaterPathogenAgnostic
Sequence information	sequencing protocol	GENEPIO:0001454	The protocol or method used for sequencing.	Provide the name and version of the procedure or protocol used for sequencing. You can also provide a link to a protocol online.	https://www.protocols.io/view/ncov-2019-sequencing-protocol-bbmuk6w?version_warning=ng		1.0.0	1.0.0	1.0.0		WastewaterSARS-CoV-2;WastewaterAMR;WastewaterPathogenAgnostic
Sequence information	DNA fragment length	GENEPIO:0100843	The length of the DNA fragment generated by mechanical shearing or enzymatic digestion for the purposes of library preparation.	Provide the fragment length in base pairs (do not include the units).	400		1.0.0	1.0.0	1.0.0		WastewaterAMR;WastewaterPathogenAgnostic
Sequence information	genomic target enrichment method	GENEPIO:0100966	The molecular technique used to selectively capture and amplify specific regions of interest from a genome.	Provide the name of the enrichment method	hybrid selection method		1.0.0	1.0.0	1.0.0		WastewaterAMR;WastewaterPathogenAgnostic
Sequence information	genomic target enrichment method details	GENEPIO:0100967	Details that provide additional context to the molecular technique used to selectively capture and amplify specific regions of interest from a genome.	Provide details that are applicable to the method you used.	enrichment was done using Illumina Target Enrichment methodology with the Illumina DNA Prep with enrichment kit.		1.0.0	1.0.0	1.0.0		WastewaterAMR;WastewaterPathogenAgnostic
Sequence information	amplicon pcr primer scheme	GENEPIO:0001456	The specifications of the primers (primer sequences, binding positions, fragment size generated etc) used to generate the amplicons to be sequenced.	Provide the name and version of the primer scheme used to generate the amplicons for sequencing.	artic v1		1.0.0	1.0.0	1.0.0		WastewaterSARS-CoV-2;WastewaterPathogenAgnostic
Sequence information	amplicon pcr primer scheme URL	GENEPIO:0102068	A URL linking to detailed information or documentation about the amplicon PCR primer scheme, including specifications such as primer sequences, binding positions, and fragment sizes. This URL should direct users to a source that provides the necessary details to reproduce or understand the primer scheme used in the dataset.	Provide the url of the primer scheme used to generate the amplicons for sequencing.	https://github.com/artic-network/primer-schemes/tree/master/ncov-2019V1		4.2.2	4.2.2	4.2.2		WastewaterSARS-CoV-2;WastewaterPathogenAgnostic
Sequence information	amplicon size	GENEPIO:0001449	The length of the amplicon generated by PCR amplification.	Provide the amplicon size expressed in base pairs.	300		1.0.0	1.0.0	1.0.0		WastewaterSARS-CoV-2;WastewaterPathogenAgnostic
	Bioinformatics and QC metrics	GENEPIO:0001457									WastewaterSARS-CoV-2;WastewaterAMR;WastewaterPathogenAgnostic
Bioinformatics and QC metrics	quality control method name	GENEPIO:0100557	The name of the method used to assess whether a sequence passed a predetermined quality control threshold.	Providing the name of the method used for quality control is very important for interpreting the rest of the QC information. Method names can be provided as the name of a pipeline or a link to a GitHub repository. Multiple methods should be listed and separated by a semi-colon. Do not include QC tags in other fields if no method name is provided.	ncov-tools		1.0.0	1.0.0	1.0.0		WastewaterSARS-CoV-2;WastewaterAMR;WastewaterPathogenAgnostic

Bioinformatics and QC metrics	quality control method version	GENEPIO:0100558	The version number of the method used to assess whether a sequence passed a predetermined quality control threshold.	Methods updates can make big differences to their outputs. Provide the version of the method used for quality control. The version can be expressed using whatever convention the developer implements (e.g. date, semantic versioning). If multiple methods were used, record the version numbers in the same order as the method names. Separate the version numbers using a semi-colon.	1.2.3	1.0.0	1.0.0	1.0.0	WastewaterSARS-CoV-2;WastewaterAMR;WastewaterPathogenAgnostic
Bioinformatics and QC metrics	quality control determination	GENEPIO:0100559	The determination of a quality control assessment.	Select a value from the pick list provided. If a desired value is missing, submit a new term request to the PHA4GE QC Tag GitHub issue tracker using the New Term Request form.	sequence failed quality control	1.0.0	1.0.0	1.0.0	WastewaterSARS-CoV-2;WastewaterAMR;WastewaterPathogenAgnostic
Bioinformatics and QC metrics	quality control issues	GENEPIO:0100560	The reason contributing to, or causing, a low quality determination in a quality control assessment.	Select a value from the pick list provided. If a desired value is missing, submit a new term request to the PHA4GE QC Tag GitHub issue tracker using the New Term Request form.	low average genome coverage	1.0.0	1.0.0	1.0.0	WastewaterSARS-CoV-2;WastewaterAMR;WastewaterPathogenAgnostic
Bioinformatics and QC metrics	quality control details	GENEPIO:0100561	The details surrounding a low quality determination in a quality control assessment.	Provide notes or details regarding QC results using free text.	CT value of 39. Low viral load. Low DNA concentration after amplification.	1.0.0	1.0.0	1.0.0	WastewaterSARS-CoV-2;WastewaterAMR;WastewaterPathogenAgnostic
Bioinformatics and QC metrics	raw sequence data processing method	GENEPIO:0001458	The method used for raw data processing such as removing barcodes, adapter trimming, filtering etc.	Provide the software name followed by the version or a link to the github protocol e.g. Trimmomatic v. 0.38, Porechop v. 0.2.3	Porechop 0.2.3	1.0.0	1.0.0	1.0.0	WastewaterSARS-CoV-2;WastewaterAMR;WastewaterPathogenAgnostic
Bioinformatics and QC metrics	dehosting method	GENEPIO:0001459	The method used to remove host reads from the pathogen sequence.	Provide the name and version number of the software used to remove host reads.	Nanostrapper	1.0.0	1.0.0	1.0.0	WastewaterSARS-CoV-2;WastewaterAMR;WastewaterPathogenAgnostic
Bioinformatics and QC metrics	genome sequence file name	GENEPIO:0101715	The name of the consensus sequence file.	Provide the name and version number, with the file extension, of the processed genome sequence file e.g. a consensus sequence FASTA file or a genome assembly file.	mpxvassembly.fasta	3.1.1	3.1.1	3.1.1	WastewaterSARS-CoV-2;WastewaterAMR;WastewaterPathogenAgnostic
Bioinformatics and QC metrics	genome sequence file path	GENEPIO:0101716	The filepath of the consensus sequence FASTA file.	Provide the filepath of the genome sequence FASTA file.	/User/Documents/ViralLab/Data/mpxvassembly.fasta	3.1.1	3.1.1	3.1.1	WastewaterSARS-CoV-2;WastewaterAMR;WastewaterPathogenAgnostic
Bioinformatics and QC metrics	sequence assembly software name	GENEPIO:0100825	The name of the software used to assemble a sequence.	Provide the name of the software used to assemble the sequence.	SPAdes Genome Assembler, Canu, wtdbg2, velvet	1.0.0	1.0.0	1.0.0	WastewaterAMR;WastewaterPathogenAgnostic
Bioinformatics and QC metrics	sequence assembly software version	GENEPIO:0100826	The version of the software used to assemble a sequence.	Provide the version of the software used to assemble the sequence.	3.15.5	1.0.0	1.0.0	1.0.0	WastewaterAMR;WastewaterPathogenAgnostic
Bioinformatics and QC metrics	consensus sequence software name	GENEPIO:0001463	The name of the software used to generate the consensus sequence.	Provide the name of the software used to generate the consensus sequence.	ivar	1.0.0	1.0.0	1.0.0	WastewaterSARS-CoV-2
Bioinformatics and QC metrics	consensus sequence software version	GENEPIO:0001469	The version of the software used to generate the consensus sequence.	Provide the version of the software used to generate the consensus sequence.	1.3	1.0.0	1.0.0	1.0.0	WastewaterSARS-CoV-2
Bioinformatics and QC metrics	breadth of coverage value	GENEPIO:0001472	The percentage of the reference genome covered by the sequenced data, to a prescribed depth.	Provide value as a percent.	95	1.0.0	1.0.0	1.0.0	WastewaterSARS-CoV-2;WastewaterAMR;WastewaterPathogenAgnostic
Bioinformatics and QC metrics	depth of coverage value	GENEPIO:0001474	The average number of reads representing a given nucleotide in the reconstructed sequence.	Provide value as a fold of coverage.	400	1.0.0	1.0.0	1.0.0	WastewaterSARS-CoV-2;WastewaterAMR;WastewaterPathogenAgnostic
Bioinformatics and QC metrics	depth of coverage threshold	GENEPIO:0001475	The threshold used as a cut-off for the depth of coverage.	Provide the threshold fold coverage.	100	1.0.0	1.0.0	1.0.0	WastewaterSARS-CoV-2;WastewaterAMR;WastewaterPathogenAgnostic
Bioinformatics and QC metrics	genome completeness	GENEPIO:0100844	The percentage of expected genes identified in the genome being sequenced. Missing genes indicate missing genomic regions (incompleteness) in the data.	Provide the genome completeness as a percent (no need to include units).	85	1.0.0	1.0.0	1.0.0	WastewaterSARS-CoV-2;WastewaterPathogenAgnostic
Bioinformatics and QC metrics	number of base pairs sequenced	GENEPIO:0001482	The number of total base pairs generated by the sequencing process.	Provide a numerical value (no need to include units).	387566	1.0.0	1.0.0	1.0.0	WastewaterSARS-CoV-2;WastewaterAMR;WastewaterPathogenAgnostic
Bioinformatics and QC metrics	number of total reads	GENEPIO:0100827	The total number of non-unique reads generated by the sequencing process.	Provide a numerical value (no need to include units).	423867	1.0.0	1.0.0	1.0.0	WastewaterSARS-CoV-2;WastewaterAMR;WastewaterPathogenAgnostic
Bioinformatics and QC metrics	number of unique reads	GENEPIO:0100828	The number of unique reads generated by the sequencing process.	Provide a numerical value (no need to include units).	248236	1.0.0	1.0.0	1.0.0	WastewaterSARS-CoV-2;WastewaterAMR;WastewaterPathogenAgnostic
Bioinformatics and QC metrics	minimum post-trimming read length	GENEPIO:0100829	The threshold used as a cut-off for the minimum length of a read after trimming.	Provide a numerical value (no need to include units).	150	1.0.0	1.0.0	1.0.0	WastewaterSARS-CoV-2;WastewaterAMR;WastewaterPathogenAgnostic
Bioinformatics and QC metrics	number of contigs	GENEPIO:0100937	The number of contigs (contiguous sequences) in a sequence assembly.	Provide a numerical value.	10	1.0.0	1.0.0	1.0.0	WastewaterSARS-CoV-2;WastewaterPathogenAgnostic
Bioinformatics and QC metrics	percent Ns across total genome length	GENEPIO:0100830	The percentage of the assembly that consists of ambiguous bases (Ns).	Provide a numerical value (no need to include units).	2	1.0.0	1.0.0	1.0.0	WastewaterSARS-CoV-2;WastewaterPathogenAgnostic
Bioinformatics and QC metrics	Ns per 100 kbp	GENEPIO:0001484	The number of ambiguous bases (Ns) normalized per 100 kilobasepairs (kbp).	Provide a numerical value (no need to include units).	342	1.0.0	1.0.0	1.0.0	WastewaterSARS-CoV-2
Bioinformatics and QC metrics	N50	GENEPIO:0100938	The length of the shortest read that, together with other reads, represents at least 50% of the nucleotides in a set of sequences.	Provide the N50 value in Mb.	150	1.0.0	1.0.0	1.0.0	WastewaterSARS-CoV-2;WastewaterPathogenAgnostic
Bioinformatics and QC metrics	percent read contamination	GENEPIO:0100845	The percent of the total number of reads identified as contamination (not belonging to the target organism) in a sequence dataset.	Provide the percent contamination value (no need to include units).	2	1.0.0	1.0.0	1.0.0	WastewaterSARS-CoV-2;WastewaterPathogenAgnostic
Bioinformatics and QC metrics	sequence assembly length	GENEPIO:0100846	The length of the genome generated by assembling reads using a scaffold or by reference-based mapping.	Provide a numerical value (no need to include units).	34272	1.0.0	1.0.0	1.0.0	WastewaterPathogenAgnostic
Bioinformatics and QC metrics	consensus genome length	GENEPIO:0001483	The length of the genome defined by the most common nucleotides at each position.	Provide a numerical value (no need to include units).	38677	1.0.0	1.0.0	1.0.0	WastewaterSARS-CoV-2
Bioinformatics and QC metrics	bioinformatics protocol	GENEPIO:0001489	A description of the overall bioinformatics strategy used.	Further details regarding the methods used to process raw data, and/or generate assemblies, and/or generate consensus sequences can. This information can be provided in an SOP or protocol or pipeline/workflow. Provide the name and version number of the protocol, or a GitHub link to a pipeline or workflow.	https://github.com/phac-nml/ncov2019-artic-rt	1.0.0	1.0.0	1.0.0	WastewaterSARS-CoV-2;WastewaterAMR;WastewaterPathogenAgnostic
	Taxonomic identification information	GENEPIO:0101082							WastewaterAMR;WastewaterPathogenAgnostic
Taxonomic identification information	read mapping software name	GENEPIO:0100832	The name of the software used to map sequence reads to a reference genome or set of reference genes.	Provide the name of the read mapping software.	Bowtie2, BWA-MEM, TopHat	1.0.0	1.0.0	1.0.0	WastewaterAMR
Taxonomic identification information	read mapping software version	GENEPIO:0100833	The version of the software used to map sequence reads to a reference genome or set of reference genes.	Provide the version number of the read mapping software.	2.5.1	1.0.0	1.0.0	1.0.0	WastewaterAMR
Taxonomic identification information	read mapping software name	GENEPIO:0100832	The name of the software used to map sequence reads to a reference genome or set of reference genes.	Provide the name of the read mapping software.	Bowtie2, BWA-MEM, TopHat	1.0.0	1.0.0	1.0.0	WastewaterPathogenAgnostic
Taxonomic identification information	read mapping software version	GENEPIO:0100833	The version of the software used to map sequence reads to a reference genome or set of reference genes.	Provide the version number of the read mapping software.	2.5.1	1.0.0	1.0.0	1.0.0	WastewaterPathogenAgnostic
Taxonomic identification information	taxonomic reference database name	GENEPIO:0100834	The name of the taxonomic reference database used to identify the organism.	Provide the name of the taxonomic reference database.	NCBITaxon	1.0.0	1.0.0	1.0.0	WastewaterAMR;WastewaterPathogenAgnostic

Taxonomic identification information	taxonomic reference database version	GENEPIO:0100835	The version of the taxonomic reference database used to identify the organism.	Provide the version number of the taxonomic reference database.	1.3			1.0.0	1.0.0	1.0.0	WastewaterAMR;WastewaterPathogenAgnostic	
Taxonomic identification information	taxonomic analysis report filename	GENEPIO:0101074	The filename of the report containing the results of a taxonomic analysis.	Provide the filename of the report containing the results of the taxonomic analysis.	WWtax_report_Feb1_2024.doc			1.0.0	1.0.0	1.0.0	WastewaterAMR;WastewaterPathogenAgnostic	
Taxonomic identification information	taxonomic analysis date	GENEPIO:0101075	The date a taxonomic analysis was performed.	Providing the date that an analysis was performed can help provide context for tool and reference database versions. Provide the date that the taxonomic analysis was performed in ISO 8601 format, i.e. "YYYY-MM-DD".	2024-02-01			1.0.0	1.0.0	1.0.0	WastewaterAMR;WastewaterPathogenAgnostic	
Taxonomic identification information	read mapping criteria	GENEPIO:0100836	A description of the criteria used to map reads to a reference sequence.	Provide a description of the read mapping criteria.	Phred score >20			1.0.0	1.0.0	1.0.0	WastewaterAMR;WastewaterPathogenAgnostic	
AMR detection information		GENEPIO:0100479										WastewaterAMR
AMR detection information	AMR analysis software name	GENEPIO:0101076	The name of the software used to perform an in silico antimicrobial resistance determinant identification/analysis.	Provide the name of the software used for AMR analysis.	Resistance Gene Identifier			1.0.0	1.0.0	1.0.0	WastewaterAMR	
AMR detection information	AMR analysis software version	GENEPIO:0101077	The version number of the software used to perform an in silico antimicrobial resistance determinant identification/analysis.	Provide the version number of the software used for AMR analysis.	6.0.3			1.0.0	1.0.0	1.0.0	WastewaterAMR	
AMR detection information	AMR reference database name	GENEPIO:0101078	The name of the reference database used to perform an in silico antimicrobial resistance determinant identification/analysis.	Provide the name of the reference database used for AMR analysis.	Comprehensive Antibiotic Resistance Database (CARD)			1.0.0	1.0.0	1.0.0	WastewaterAMR	
AMR detection information	AMR reference database version	GENEPIO:0101079	The version number of the reference database used to perform an in silico antimicrobial resistance determinant identification/analysis.	Provide the version number of the reference database used for AMR analysis.	3.2.9			1.0.0	1.0.0	1.0.0	WastewaterAMR	
AMR detection information	AMR analysis report filename	GENEPIO:0101080	The filename of the report containing the results of an in silico antimicrobial resistance analysis.	Provide the filename of the report containing the results of the AMR analysis.	WWAMR_report_Feb1_2024.doc			1.0.0	1.0.0	1.0.0	WastewaterAMR	
AMR detection information	AMR analysis date	GENEPIO:0102069	The date the antimicrobial resistance analysis was performed.	Providing the date that an analysis was performed can help provide context for tool and reference database versions. Provide the date that the analysis was performed in ISO 8601 format, i.e. "YYYY-MM-DD".	2024-02-01			4.2.2	4.2.2	4.2.2	WastewaterAMR	
Lineage/clade information		GENEPIO:0001498										WastewaterSARS-CoV-2
Lineage/clade information	lineage/clade name	GENEPIO:0001500	The name of the lineage or clade.	Provide the Pangolin or Nextstrain lineage/clade name. Multiple lineages/clades can be provided, separated by a semicolon.	B.1.1.7			1.0.0	1.0.0	1.0.0	WastewaterSARS-CoV-2	
Lineage/clade information	lineage/clade analysis software name	GENEPIO:0001501	The name of the software used to determine the lineage/clade.	Provide the name of the software used to determine the lineage/clade.	Freyja			1.0.0	1.0.0	1.0.0	WastewaterSARS-CoV-2	
Lineage/clade information	lineage/clade analysis software version	GENEPIO:0001502	The version of the software used to determine the lineage/clade.	Provide the version of the software used to determine the lineage/clade.	1.5.0			1.0.0	1.0.0	1.0.0	WastewaterSARS-CoV-2	
Lineage/clade information	lineage/clade analysis report filename	GENEPIO:0101081	The filename of the report containing the results of a lineage/clade analysis.	Provide the filename of the report containing the results of the lineage/clade analysis.	aggregated-WWSC2-ABC-b_1234.tsv			1.0.0	1.0.0	1.0.0	WastewaterSARS-CoV-2	
Lineage/clade information	lineage/clade analysis date	GENEPIO:0102070	The date of the lineage/clade analysis was performed.	Providing the date that an analysis was performed can help provide context for tool and reference database versions. Provide the date that the analysis was performed in ISO 8601 format, i.e. "YYYY-MM-DD".	2024-02-01			4.2.2	4.2.2	4.2.2	WastewaterSARS-CoV-2	
Pathogen diagnostic testing		GENEPIO:0001506										WastewaterSARS-CoV-2;WastewaterAMR;WastewaterPathogenAgnostic
Pathogen diagnostic testing	target taxonomic name 1	GENEPIO:0102049	The scientific name of the organism or taxon that is the focus of the study, assay, or diagnostic test.	The target taxonomic name refers to the specific species, genus, or other taxonomic classification that the assay or diagnostic test is designed to identify, detect, or characterize. This may include the full binomial name (Genus species) or a higher taxonomic rank (e.g., genus, family) when species-level identification is not applicable. Avoid abbreviations. Search for taxonomic names here: ncbi.nlm.nih.gov/taxonomy .				4.2.2	4.2.2	4.2.2	WastewaterAMR;WastewaterPathogenAgnostic	
Pathogen diagnostic testing	assay target name 1	GENEPIO:0102052	The name of the assay target used in the diagnostic RT-PCR test.	The specific genomic region, sequence, or variant targeted by the assay in a diagnostic RT-PCR test. This may include parts of a gene, non-coding regions, or other genetic elements that serve as a marker for detecting the presence of a pathogen or other relevant entities.				4.2.2	4.2.2	4.2.2	WastewaterSARS-CoV-2;WastewaterAMR;WastewaterPathogenAgnostic	
Pathogen diagnostic testing	assay target details 1	GENEPIO:0102045	Describe any details of the assay target.	Provide details that are applicable to the assay used for the diagnostic test.				3.1.1	3.1.1	3.1.1	WastewaterSARS-CoV-2;WastewaterAMR;WastewaterPathogenAgnostic	
Pathogen diagnostic testing	gene symbol 1	GENEPIO:0102041	The symbol of the gene used in the diagnostic RT-PCR test.	Select a gene name value from the pick list provided.	E gene (orf4)			3.1.1	3.1.1	1.0.0	WastewaterSARS-CoV-2	
Pathogen diagnostic testing	gene symbol 1	GENEPIO:0102041	The symbol of the gene used in the diagnostic RT-PCR test.	Provide the full name of the gene used in the test. Standardized gene names can be found in the Gene Ontology using this look-up service: https://ncbi.nlm.nih.gov/ontology	gvrase A			3.1.1	3.1.1	1.0.0	WastewaterAMR;WastewaterPathogenAgnostic	
Pathogen diagnostic testing	diagnostic target presence 1	GENEPIO:0100962	The binary value of the result from a diagnostic test.	Select a value from the pick list provided, to describe whether a target was determined to be present or absent within a sample.	diagnostic target present			1.0.0	1.0.0	1.0.0	WastewaterSARS-CoV-2;WastewaterAMR;WastewaterPathogenAgnostic	
Pathogen diagnostic testing	diagnostic measurement value 1	GENEPIO:0100963	The value of the result from a diagnostic test.	Provide the numerical result of a diagnostic test (no need to include units).	1000			1.0.0	1.0.0	1.0.0	WastewaterSARS-CoV-2;WastewaterAMR;WastewaterPathogenAgnostic	
Pathogen diagnostic testing	diagnostic measurement unit 1	GENEPIO:0100964	The unit of the result from a diagnostic test.	Select a value from the pick list provided, to describe the units of the given diagnostic test.	cycle threshold (Ct)			1.0.0	1.0.0	1.0.0	WastewaterSARS-CoV-2;WastewaterAMR;WastewaterPathogenAgnostic	
Pathogen diagnostic testing	diagnostic measurement method 1	GENEPIO:0100965	The method by which a diagnostic result was determined.	Select a value from the pick list provided to describe the method used for a given diagnostic test.	qPCR			1.0.0	1.0.0	1.0.0	WastewaterSARS-CoV-2;WastewaterAMR;WastewaterPathogenAgnostic	
Pathogen diagnostic testing	target taxonomic name 2	GENEPIO:0102050	The scientific name of the organism or taxon that is the focus of the study, assay, or diagnostic test.	The target taxonomic name refers to the specific species, genus, or other taxonomic classification that the assay or diagnostic test is designed to identify, detect, or characterize. This may include the full binomial name (Genus species) or a higher taxonomic rank (e.g., genus, family) when species-level identification is not applicable. Avoid abbreviations. Search for taxonomic names here: ncbi.nlm.nih.gov/taxonomy .				to update	to update	to update	WastewaterAMR;WastewaterPathogenAgnostic	
Pathogen diagnostic testing	assay target name 2	GENEPIO:0102038	The name of the assay target used in the diagnostic RT-PCR test.	The specific genomic region, sequence, or variant targeted by the assay in a diagnostic RT-PCR test. This may include parts of a gene, non-coding regions, or other genetic elements that serve as a marker for detecting the presence of a pathogen or other relevant entities.				3.1.1	3.1.1	3.1.1	WastewaterSARS-CoV-2;WastewaterAMR;WastewaterPathogenAgnostic	
Pathogen diagnostic testing	assay target details 2	GENEPIO:0102046	Describe any details of the assay target.	Provide details that are applicable to the assay used for the diagnostic test.				3.1.1	3.1.1	3.1.1	WastewaterSARS-CoV-2;WastewaterAMR;WastewaterPathogenAgnostic	
Pathogen diagnostic testing	gene symbol 2	GENEPIO:0102042	The symbol of the gene used in the diagnostic RT-PCR test.	Select a gene name value from the pick list provided.	E gene (orf4)			3.1.1	3.1.1	1.0.0	WastewaterSARS-CoV-2	

Pathogen diagnostic testing	gene symbol 2	GENEPIO:0102042	The symbol of the gene used in the diagnostic RT-PCR test.	Provide the full name of the gene used in the test. Standardized gene names can be found in the Gene Ontology using this look-up service: https://bit.ly/2Sg1LbJ	gyrase A			3.1.1	3.1.1	1.0.0	WastewaterAMR;WastewaterPathogenAgnostic	
Pathogen diagnostic testing	diagnostic target presence 2		The binary value of the result from a diagnostic test.	Select a value from the pick list provided, to describe whether a target was determined to be present or absent within a sample.	diagnostic target present			1.0.0	1.0.0	1.0.0	WastewaterSARS-CoV-2;WastewaterAMR;WastewaterPathogenAgnostic	
Pathogen diagnostic testing	diagnostic measurement value 2		The value of the result from a diagnostic test.	Provide the numerical result of a diagnostic test (no need to include units).	1000			1.0.0	1.0.0	1.0.0	WastewaterSARS-CoV-2;WastewaterAMR;WastewaterPathogenAgnostic	
Pathogen diagnostic testing	diagnostic measurement unit 2		The unit of the result from a diagnostic test.	Select a value from the pick list provided, to describe the units of the given diagnostic test.	cycle threshold (Ct)			1.0.0	1.0.0	1.0.0	WastewaterSARS-CoV-2;WastewaterAMR;WastewaterPathogenAgnostic	
Pathogen diagnostic testing	diagnostic measurement method 2		The method by which a diagnostic result was determined.	Select a value from the pick list provided to describe the method used for a given diagnostic test.	qPCR			1.0.0	1.0.0	1.0.0	WastewaterSARS-CoV-2;WastewaterAMR;WastewaterPathogenAgnostic	
Pathogen diagnostic testing	target taxonomic name 3	GENEPIO:0102051	The scientific name of the organism or taxon that is the focus of the study, assay, or diagnostic test.	The target taxonomic name refers to the specific species, genus, or other taxonomic classification that the assay or diagnostic test is designed to identify, detect, or characterize. This may include the full binomial name (Genus species) or a higher taxonomic rank (e.g., genus, family) when species-level identification is not applicable. Avoid abbreviations. Search for taxonomic names here: ncbi.nlm.nih.gov/taxonomy .				to update	to update	to update	WastewaterAMR;WastewaterPathogenAgnostic	
Pathogen diagnostic testing	assay target name 3	GENEPIO:0102039	The name of the assay target used in the diagnostic RT-PCR test.	The specific genomic region, sequence, or variant targeted by the assay in a diagnostic RT-PCR test. This may include parts of a gene, non-coding regions, or other genetic elements that serve as a marker for detecting the presence of a pathogen or other relevant entities.				3.1.1	3.1.1	3.1.1	WastewaterSARS-CoV-2;WastewaterAMR;WastewaterPathogenAgnostic	
Pathogen diagnostic testing	assay target details 3	GENEPIO:0102047	Describe any details of the assay target.	Provide details that are applicable to the assay used for the diagnostic test.				3.1.1	3.1.1	3.1.1	WastewaterSARS-CoV-2;WastewaterAMR;WastewaterPathogenAgnostic	
Pathogen diagnostic testing	gene symbol 3	GENEPIO:0102043	The symbol of the gene used in the diagnostic RT-PCR test.	Select a gene name value from the pick list provided. Provide the full name of the gene used in the test. Standardized gene names can be found in the Gene Ontology using this look-up service: https://bit.ly/2Sg1LbJ	E gene (orf4)			3.1.1	3.1.1	3.1.1	WastewaterSARS-CoV-2	
Pathogen diagnostic testing	gene symbol 3	GENEPIO:0102043	The symbol of the gene used in the diagnostic RT-PCR test.	https://bit.ly/2Sg1LbJ	gyrase A			3.1.1	3.1.1	3.1.1	WastewaterAMR;WastewaterPathogenAgnostic	
Pathogen diagnostic testing	diagnostic target presence 3		The binary value of the result from a diagnostic test.	Select a value from the pick list provided, to describe whether a target was determined to be present or absent within a sample.	diagnostic target present			3.1.1	3.1.1	3.1.1	WastewaterSARS-CoV-2;WastewaterAMR;WastewaterPathogenAgnostic	
Pathogen diagnostic testing	diagnostic measurement value 3		The value of the result from a diagnostic test.	Provide the numerical result of a diagnostic test (no need to include units).	1000			3.1.1	3.1.1	3.1.1	WastewaterSARS-CoV-2;WastewaterAMR;WastewaterPathogenAgnostic	
Pathogen diagnostic testing	diagnostic measurement unit 3		The unit of the result from a diagnostic test.	Select a value from the pick list provided, to describe the units of the given diagnostic test.	cycle threshold (Ct)			3.1.1	3.1.1	3.1.1	WastewaterSARS-CoV-2;WastewaterAMR;WastewaterPathogenAgnostic	
Pathogen diagnostic testing	diagnostic measurement method 3		The method by which a diagnostic result was determined.	Select a value from the pick list provided to describe the method used for a given diagnostic test.	qPCR			3.1.1	3.1.1	3.1.1	WastewaterSARS-CoV-2;WastewaterAMR;WastewaterPathogenAgnostic	
Contributor acknowledgement		GENEPIO:0001516									WastewaterSARS-CoV-2;WastewaterAMR;WastewaterPathogenAgnostic	
Contributor acknowledgement	authors	GENEPIO:0001517	Names of individuals contributing to the processes of sample collection, sequence generation, analysis, and data submission.	Include the first and last names of all individuals that should be attributed, separated by a semicolon.	Tejinder Singh; Fei Hu; Joe Blogs						WastewaterSARS-CoV-2;WastewaterAMR;WastewaterPathogenAgnostic	
Contributor acknowledgement	DataHarmonizer provenance	GENEPIO:0001518	The DataHarmonizer software and template version provenance.	The current software and template version information will be automatically generated in this field after the user utilizes the "validate" function. This information will be generated regardless as to whether the row is valid or not.	DataHarmonizer v3.3.3, Influenza v1.0.0						WastewaterSARS-CoV-2;WastewaterAMR;WastewaterPathogenAgnostic	

Field	Term	Ontology ID	Definition	Guidance	Deprecated Label	Deprecated ID	Version Tracking		Description/ Guidance	Editor Notes
					IMPORTANT: Only labels and/or IDs will be deprecated, always with replacement version provided. If a term changes in its meaning, a new term will be created.		Label	ID		
null value menu										
	Not Applicable [GENEPIO:0001619]	GENEPIO:0001619	A categorical choice recorded when a datum does not apply to a given context.							
	Missing [GENEPIO:0001618]	GENEPIO:0001618	A categorical choice recorded when a datum is not recorded for an arbitrary reason.							
	Not Collected [GENEPIO:0001620]	GENEPIO:0001620	A categorical choice recorded when a datum was not measured or collected.							
	Not Provided [GENEPIO:0001668]	GENEPIO:0001668	A categorical choice recorded when a datum was not provided for an arbitrary reason.							
	Restricted Access [GENEPIO:0001810]	GENEPIO:0001810	A categorical choice recorded when a datum is not shared publicly because of information privacy concerns.							
geo_loc_name (country) menu										
	Afghanistan [GAZ:00006882]	GAZ:00006882	url:http://en.wikipedia.org/wiki/Afghanistan							
	Albania [GAZ:00002953]	GAZ:00002953	communes (Komuna). [url:http://en.wikipedia.org/wiki/Albania]							
	Algeria [GAZ:00000563]	GAZ:00000563	url:http://en.wikipedia.org/wiki/Algeria							
	American Samoa [GAZ:00003957]	GAZ:00003957	url:http://en.wikipedia.org/wiki/American_Samoa							
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	Argentina [GAZ:00002928]	GAZ:00002928	url:http://en.wikipedia.org/wiki/Argentina							
	Armenia [GAZ:00004094]	GAZ:00004094	[url:http://en.wikipedia.org/wiki/Armenia]							
	Aruba [GAZ:00004025]	GAZ:00004025	administrative subdivisions. [url:http://en.wikipedia.org/wiki/Aruba]							
		GAZ:00005901	[url:http://en.wikipedia.org/wiki/Ashmore_and_Carter_Islands]							
	Australia [GAZ:00000463]	GAZ:00000463	other minor territories.							
	Austria [GAZ:00002942]	GAZ:00002942	municipalities.							
	Azerbaijan [GAZ:00004941]	GAZ:00004941	respublica).							
			A country consisting of two thousand cays and seven hundred islands that form an archipelago. It is located in the Atlantic Ocean, southeast of Florida and the United States, north of Cuba, the island of Hispanola and the Caribbean, and northwest of the British overseas territory of the Turks and Caicos Islands. It is divided into 32 districts, plus New Providence, whose affairs are handled directly by the central government.							
	Bahamas [GAZ:00002733]	GAZ:00002733								
	Bahrain [GAZ:00005281]	GAZ:00005281	A borderless island country in the Persian Gulf. Saudi Arabia lies to the west and is connected to Bahrain by the King Fahd Causeway, and Qatar is to the south across the Gulf of Bahrain. Bahrain is split into five governorates.							
			An uninhabited atoll located just north of the equator in the central Pacific Ocean about 3,100 km southwest of Honolulu. Baker Island is an unincorporated and unorganized territory of the US.							
	Baker Island [GAZ:00007117]	GAZ:00007117								
			A country in South Asia. It is bordered by India on all sides except for a small border with Myanmar to the far southeast and by the Bay of Bengal to the south. Bangladesh is divided into six administrative divisions. Divisions are subdivided into districts (zila). There are 64 districts in Bangladesh, each further subdivided into upazila (subdistricts) or thana ("police stations").							
	Bangladesh [GAZ:00003750]	GAZ:00003750								
			An island country in the Lesser Antilles of the West Indies, in the Caribbean region of the Americas, and the most easterly of the Caribbean Islands. It is 34 kilometres (21 miles) in length and up to 23 km (14 mi) in width, covering an area of 432 km2 (167 sq mi). It is in the western part of the North Atlantic, 100 km (62 mi) east of the Windward Islands and the Caribbean Sea.[7] Barbados is east of the Windwards, part of the Lesser Antilles, at roughly 13°N of the equator. It is about 168 km (104 mi) east of both the countries of Saint Lucia and Saint Vincent and the Grenadines and 180 km (110 mi) south-east of Martinique and 400 km (250 mi) north-east of Trinidad and Tobago. Barbados is outside the principal Atlantic hurricane belt. Its capital and largest city is Bridgetown.							
	Barbados [GAZ:00001251]	GAZ:00001251								
			A roughly circular atoll about 10 km in diameter, which corresponds to a total size (including lagoon) of 80 km2. It is located in the southern Mozambique Channel, about half-way between Madagascar (which is 385 km to the east) and Mozambique, and 110 km northwest of Europa Island. It rises steeply from the seabed 3000 m below.							
	Bassas da India [GAZ:00005810]	GAZ:00005810								
			A landlocked country in Eastern Europe, that borders Russia to the north and east, Ukraine to the south, Poland to the west, and Lithuania and Latvia to the north. Its capital is Minsk. Belarus is divided into six voblasts, or provinces. Voblasts are further subdivided into raions (commonly translated as districts or regions). As of 2002, there are six voblasts, 118 raions, 102 towns and 108 urbanized settlements. Minsk is given a special status, due to the city serving as the national capital.							
	Belarus [GAZ:00006886]	GAZ:00006886								
			A country in northwest Europe. Belgium shares borders with France (620 km), Germany (167 km), Luxembourg (148 km) and the Netherlands (450 km). The Flemish Region (Flanders) and the Walloon Region (Wallonia) each comprise five provinces; the third region, Brussels-Capital Region, is not a province, nor does it contain any Together, these comprise 589 municipalities, which in general consist of several sub-municipalities (which were independent municipalities before the municipal merger operation mainly in 1977).							
	Belgium [GAZ:00002938]	GAZ:00002938								

	Belize [GAZ:00002934]	GAZ:00002934	A country in Central America. It is the only officially English speaking country in the region. Belize was a British colony for more than a century and was known as British Honduras until 1973. It became an independent nation within The Commonwealth in 1981. Belize is divided into 6 districts, which are further divided into 31 constituencies.								
	Benin [GAZ:00000904]	GAZ:00000904	A country in Western Africa. It borders Togo to the west, Nigeria to the east and Burkina Faso and Niger to the north; its short coastline to the south leads to the Bight of Benin. Its capital is Porto Novo, but the seat of government is Cotonou. Benin is divided into 12 departments and subdivided into 77 communes.								
	Bermuda [GAZ:00001264]	GAZ:00001264	A British overseas territory in the North Atlantic Ocean. Located off the east coast of the United States, it is situated around 1770 km NE of Miami, Florida and 1350 km S of Halifax, Nova Scotia. Comprised of approximately 138 islands.								
	Bhutan [GAZ:00003920]	GAZ:00003920	A landlocked nation in South Asia. It is located amidst the eastern end of the Himalaya Mountains and is bordered to the south, east and west by India and to the north by Tibet. Bhutan is separated from Nepal by the Indian State of Sikkim. Bhutan is divided into four dzongdey (administrative zones). Each dzongdey is further divided into dzongkhag (districts). There are twenty dzongkhag in Bhutan. Large dzongkhags are further divided into subdistricts known as dungkhag. At the basic level, groups of villages form a constituency called gewog.								
	Bolivia [GAZ:00002511]	GAZ:00002511	A landlocked country in central South America. It is bordered by Brazil on the north and east, Paraguay and Argentina on the south, and Chile and Peru on the west. Bolivia is divided into 9 departments (Spanish: departamentos). Each of the departments is subdivided into provinces (provincias), which are further subdivided into municipalities (municipios).								
	Borneo [GAZ:00025355]	GAZ:00025355	An island at the geographic centre of Maritime Southeast Asia, in relation to major Indonesian islands, it is located north of Java, west of Sulawesi, and east of Sumatra. It is the third-largest island in the world and the largest in Asia. The island is politically divided among three countries: Malaysia and Brunei in the north, and Indonesia to the south.[1] Approximately 73% of the island is Indonesian territory. In the north, the East Malaysian states of Sabah and Sarawak make up about 26% of the island. Additionally, the Malaysian federal territory of Labuan is situated on a small island just off the coast of Borneo. The sovereign state of Brunei, located on the north coast, comprises about 1% of Borneo's land area. A little more than half of the island is in the Northern Hemisphere, including Brunei and the Malaysian portion, while the Indonesian portion spans the Northern and Southern hemispheres.								
	Bosnia and Herzegovina [GAZ:00006887]	GAZ:00006887	A country on the Balkan peninsula of Southern Europe. Bordered by Croatia to the north, west and south, Serbia to the east, and Montenegro to the south, Bosnia and Herzegovina is mostly landlocked, except for 26 km of the Adriatic Sea coastline. Bosnia and Herzegovina is now divided into three political regions of which one, the Brčko District is part of the other two, the Federacija Bosne i Hercegovine and the Republika Srpska. All three have an equal constitutional status on the whole territory of Bosnia and Herzegovina.								
	Botswana [GAZ:00001097]	GAZ:00001097	A landlocked nation in Southern Africa. It is bordered by South Africa to the south and southeast, Namibia to the west, Zambia to the north, and Zimbabwe to the northeast. Botswana is divided into nine districts, which are subdivided into a total twenty-eight subdistricts.								
	Bouvet Island [GAZ:00001453]	GAZ:00001453	A sub-antarctic volcanic island in the South Atlantic Ocean, south-southwest of the Cape of Good Hope (South Africa). It is a dependent area of Norway and is not subject to the Antarctic Treaty, as it is north of the latitude south of which claims are suspended.								
	Brazil [GAZ:00002828]	GAZ:00002828	A country in South America. Bordered by the Atlantic Ocean and by Venezuela, Suriname, Guyana and the department of French Guiana to the north, Colombia to the northwest, Bolivia and Peru to the west, Argentina and Paraguay to the southwest, and Uruguay to the south. Federation of twenty-six states (estados) and one federal district (Distrito Federal). The states are subdivided into municipalities. For statistical purposes, the States are grouped into five main regions: North, Northeast, Central-West, Southeast and South.								
	British Virgin Islands [GAZ:00003961]	GAZ:00003961	A British overseas territory, located in the Caribbean to the east of Puerto Rico. The islands make up part of the Virgin Islands archipelago, the remaining islands constituting the US Virgin Islands. The British Virgin Islands consist of the main islands of Tortola, Virgin Gorda, Anegada and Jost Van Dyke, along with over fifty other smaller islands and cays. Approximately fifteen of the islands are inhabited.								
	Brunei [GAZ:00003901]	GAZ:00003901	A country located on the north coast of the island of Borneo, in Southeast Asia. Apart from its coastline with the South China Sea it is completely surrounded by the State of Sarawak, Malaysia, and in fact it is separated into two parts by Limbang, which is part of Sarawak. Brunei is divided into four districts (daerah), the districts are subdivided into thirty-eight mukims, which are then divided into kampong (villages).								
	Bulgaria [GAZ:00002950]	GAZ:00002950	A country in Southeastern Europe, borders five other countries; Romania to the north (mostly along the Danube), Serbia and the Republic of Macedonia to the west, and Greece and Turkey to the south. The Black Sea defines the extent of the country to the east. Since 1999, it has consisted of twenty-eight provinces. The provinces subdivide into 264 municipalities.								
	Burkina Faso [GAZ:00000905]	GAZ:00000905	A landlocked nation in West Africa. It is surrounded by six countries: Mali to the north, Niger to the east, Benin to the south east, Togo and Ghana to the south, and Cote d'Ivoire to the south west. Burkina Faso is divided into thirteen regions, forty-five provinces, and 301 departments (communes).								
	Burundi [GAZ:00001090]	GAZ:00001090	A small country in the Great Lakes region of Africa. It is bordered by Rwanda on the north, Tanzania on the south and east, and the Democratic Republic of the Congo on the west. Although the country is landlocked, much of its western border is adjacent to Lake Tanganyika. Burundi is divided into 17 provinces, 117 communes, and 2,638 collines.								

	Cambodia [GAZ:00006888]	GAZ:00006888	A country in Southeast Asia. The country borders Thailand to its west and northwest, Laos to its northeast, and Vietnam to its east and southeast. In the south it faces the Gulf of Thailand.								
	Cameroon [GAZ:00001093]	GAZ:00001093	A country of central and western Africa. It borders Nigeria to the west; Chad to the northeast; the Central African Republic to the east; and Equatorial Guinea, Gabon, and the Republic of the Congo to the south. Cameroon's coastline lies on the Bight of Bonny, part of the Gulf of Guinea and the Atlantic Ocean. The Republic of Cameroon is divided into ten provinces and 58 divisions or departments. The divisions are further sub-divided into sub-divisions (arrondissements) and districts.								
	Canada [GAZ:00002560]	GAZ:00002560	A country occupying most of northern North America, extending from the Atlantic Ocean in the east to the Pacific Ocean in the west and northward into the Arctic Ocean. Canada is a federation composed of ten provinces and three territories; in turn, these may be grouped into regions. Western Canada consists of British Columbia and the three Prairie provinces (Alberta, Saskatchewan, and Manitoba). Central Canada consists of Quebec and Ontario. Atlantic Canada consists of the three Maritime provinces (New Brunswick, Prince Edward Island, and Nova Scotia), along with Newfoundland and Labrador. Eastern Canada refers to Central Canada and Atlantic Canada together. Three territories (Yukon, Northwest Territories, and Nunavut) make up Northern Canada.								
	Cape Verde [GAZ:00001227]	GAZ:00001227	A republic located on an archipelago in the Macaronesia ecoregion of the North Atlantic Ocean, off the western coast of Africa. Cape Verde is divided into 22 municipalities (concelhos), and subdivided into 32 parishes (freguesias).								
	Cayman Islands [GAZ:00003986]	GAZ:00003986	A British overseas territory located in the western Caribbean Sea, comprising the islands of Grand Cayman, Cayman Brac, and Little Cayman. The Cayman Islands are divided into seven districts.								
	Central African Republic [GAZ:00001089]	GAZ:00001089	A landlocked country in Central Africa. It borders Chad in the north, Sudan in the east, the Republic of the Congo and the Democratic Republic of the Congo in the south, and Cameroon in the west. The Central African Republic is divided into 14 administrative prefectures (prefectures), along with 2 economic prefectures (prefectures économiques) and one autonomous commune. The prefectures are further divided into 71 sub-prefectures (sous-prefectures).								
	Chad [GAZ:00000586]	GAZ:00000586	A landlocked country in central Africa. It is bordered by Libya to the north, Sudan to the east, the Central African Republic to the south, Cameroon and Nigeria to the southwest, and Niger to the west. Chad is divided into 18 regions. The departments are divided into 200 sub-prefectures, which are in turn composed of 446 cantons. This is due to change.								
	Chile [GAZ:00002825]	GAZ:00002825	A country in South America occupying a long and narrow coastal strip wedged between the Andes mountains and the Pacific Ocean. The Pacific forms the country's entire western border, with Peru to the north, Bolivia to the northeast, Argentina to the east, and the Drake Passage at the country's southernmost tip. Chile claims 1,250,000 km2 of territory in Antarctica. Chile is divided into 15 regions. Every region is further divided into provinces. Finally each province is divided into communes. Each region is designated by a name and a Roman numeral, assigned from north to south. The only exception is the region housing the nation's capital, which is designated RM, that stands for Region Metropolitana (Metropolitan Region). Two new regions were created in 2006: Arica-Parinacota in the north, and Los Rios in the south. Both became operative in 2007-10.								
	China [GAZ:00002845]	GAZ:00002845	A large country in Northeast Asia. China borders 14 nations (counted clockwise from south): Vietnam, Laos, Burma, India, Bhutan, Nepal, Pakistan, Afghanistan, Tajikistan, Kyrgyzstan, Kazakhstan, Russia, Mongolia and North Korea. Additionally the border between PRC and ROC is located in territorial waters. The People's Republic of China has administrative control over twenty-two provinces and considers Taiwan to be its twenty-third province. There are also five autonomous regions, each with a designated minority group; four municipalities; and two Special Administrative Regions that enjoy considerable autonomy. The People's Republic of China administers 33 province-level regions, 333 prefecture-level regions, 2,862 county-level regions, 41,636 township-level regions, and several village-level regions.								
	Christmas Island [GAZ:00005915]	GAZ:00005915	An island in the Indian Ocean, 500 km south of Indonesia and about 2600 km northwest of Perth. The island is the flat summit of a submarine mountain.								
	Clipperton Island [GAZ:00005838]	GAZ:00005838	A nine-square km coral atoll in the North Pacific Ocean, southwest of Mexico and west of Costa Rica.								
	Cocos Islands [GAZ:00009721]	GAZ:00009721	Islands that located in the Indian Ocean, about halfway between Australia and Sri Lanka. A territory of Australia. There are two atolls and twenty-seven coral islands in the group.								
	Colombia [GAZ:00002929]	GAZ:00002929	A country located in the northwestern region of South America. Colombia is bordered to the east by Venezuela and Brazil; to the south by Ecuador and Peru; to the North by the Atlantic Ocean, through the Caribbean Sea; to the north-west by Panama; and to the west by the Pacific Ocean. Besides the countries in South America, the Republic of Colombia is recognized to share maritime borders with the Caribbean countries of Jamaica, Haiti, the Dominican Republic and the Central American countries of Honduras, Nicaragua, and Costa Rica. Colombia is divided into 32 departments and one capital district which is treated as a department. There are in total 10 districts assigned to cities in Colombia including Bogota, Barranquilla, Cartagena, Santa Marta, Tunja, Cucuta, Popayan, Buenaventura, Tumaco and Turbo. Colombia is also subdivided into some municipalities which form departments, each with a municipal seat capital city assigned. Colombia is also subdivided into corregimientos which form municipalities.								
	Comoros [GAZ:00005820]	GAZ:00005820	An island nation in the Indian Ocean, located off the eastern coast of Africa on the northern end of the Mozambique Channel between northern Madagascar and northeastern Mozambique.								

	Cook Islands [GAZ:00053798]	GAZ:00053798	A self-governing parliamentary democracy in free association with New Zealand. The fifteen small islands in this South Pacific Ocean country have a total land area of 240 km2, but the Cook Islands Exclusive Economic Zone (EEZ) covers 1.8 million km2 of ocean.							
	Coral Sea Islands [GAZ:00005917]	GAZ:00005917	A Territory of Australia which includes a group of small and mostly uninhabited tropical islands and reefs in the Coral Sea, northeast of Queensland, Australia. The only inhabited island is Willis Island. The territory covers 780,000 km2, extending east and south from the outer edge of the Great Barrier Reef, and including Herald's Beacon Island, Osprey Reef, the Willis Group, and fifteen other reef/island groups.							
	Costa Rica [GAZ:00002901]	GAZ:00002901	A republic in Central America, bordered by Nicaragua to the north, Panama to the east-southeast, the Pacific Ocean to the west and south, and the Caribbean Sea to the east. Costa Rica is composed of seven provinces, which in turn are divided into 81 cantons.							
	Cote d'Ivoire [GAZ:00000906]	GAZ:00000906	A country in West Africa. It borders Liberia and Guinea to the west, Mali and Burkina Faso to the north, Ghana to the east, and the Gulf of Guinea to the south. Cote d'Ivoire is divided into nineteen regions (regions). The regions are further divided into 58 departments.							
	Croatia [GAZ:00002719]	GAZ:00002719	A country at the crossroads of the Mediterranean, Central Europe, and the Balkans. Its capital is Zagreb. Croatia borders with Slovenia and Hungary to the north, Serbia to the northeast, Bosnia and Herzegovina to the east, Montenegro to the far southeast, and the Adriatic Sea to the south. Croatia is divided into 21 counties (zupanija) and the capital Zagreb's city district.							
	Cuba [GAZ:00003762]	GAZ:00003762	A country that consists of the island of Cuba (the largest and second-most populous island of the Greater Antilles), Isla de la Juventud and several adjacent small islands. Fourteen provinces and one special municipality (the Isla de la Juventud) now compose Cuba.							
	Curacao [GAZ:00012582]	GAZ:00012582	One of five island areas of the Netherlands Antilles.							
	Cyprus [GAZ:00004006]	GAZ:00004006	The third largest island in the Mediterranean Sea (after Sicily and Sardinia), Cyprus is situated in the eastern Mediterranean, just south of the Anatolian peninsula (or Asia Minor) of the Asian mainland; thus, it is often included in the Middle East (see also Western Asia and Near East). Turkey is 75 km north; other neighbouring countries include Syria and Lebanon to the east, Israel to the southeast, Egypt to the south, and Greece to the west-north-west.							
	Czech Republic [GAZ:00002954]	GAZ:00002954	A landlocked country in Central Europe. It has borders with Poland to the north, Germany to the northwest and southwest, Austria to the south, and Slovakia to the east. The capital and largest city is Prague. The country is composed of the historic regions of Bohemia and Moravia, as well as parts of Silesia. Since 2000, the Czech Republic is divided into thirteen regions (kraje, singular kraj) and the capital city of Prague. The older seventy-six districts (okresy, singular okres) including three 'statutory cities' (without Prague, which had special status) were disbanded in 1999 in an administrative reform; they remain as territorial division and seats of various branches of state administration. Since 2003-01-01, the regions have been divided into around 203 Municipalities with Extended Competence (unofficially named "Little Districts" (Czech: 'male okresy') which took over most of the administration of the former District Authorities. Some of these are further divided into Municipalities with Commissioned Local Authority. However, the old districts still exist as territorial units and remain as seats of some of the offices.							
	Democratic Republic of the Congo [GAZ:00001086]	GAZ:00001086	A country of central Africa. It borders the Central African Republic and Sudan on the north, Uganda, Rwanda, and Burundi on the east, Zambia and Angola on the south, the Republic of the Congo on the west, and is separated from Tanzania by Lake Tanganyika on the east. The country enjoys access to the ocean through a 40 km stretch of Atlantic coastline at Muanda and the roughly 9 km wide mouth of the Congo river which opens into the Gulf of Guinea. Congo Kinshasa is now divided into 11 Provinces, to be redistributed into 25 Provinces from 2.2009. Each Province is divided into Zones.							
	Denmark [GAZ:00005852]	GAZ:00005852	That part of the Kingdom of Denmark located in continental Europe. The mainland is bordered to the south by Germany; Denmark is located to the southwest of Sweden and the south of Norway. Denmark borders both the Baltic and the North Sea. The country consists of a large peninsula, Jutland (Jylland) and a large number of islands, most notably Zealand (Sjælland), Funen (Fyn), Vendsyssel-Thy, Lolland, Falster and Bornholm as well as hundreds of minor islands often referred to as the Danish Archipelago.							
	Djibouti [GAZ:00000582]	GAZ:00000582	A country in eastern Africa. Djibouti is bordered by Eritrea in the north, Ethiopia in the west and south, and Somalia in the southeast. The remainder of the border is formed by the Red Sea and the Gulf of Aden. On the other side of the Red Sea, on the Arabian Peninsula, 20 km from the coast of Djibouti, is Yemen. The capital of Djibouti is the city of Djibouti. Djibouti is divided into 5 regions and one city. It is further subdivided into 11 districts.							
	Dominica [GAZ:00006890]	GAZ:00006890	An island nation in the Caribbean Sea. Dominica is divided into ten parishes.							
	Dominican Republic [GAZ:00003952]	GAZ:00003952	A country in the West Indies that occupies the E two-thirds of the Hispaniola island. The Dominican Republic's shores are washed by the Atlantic Ocean to the north and the Caribbean Sea to the south. The Mona Passage, a channel about 130 km wide, separates the country (and the Hispaniola) from Puerto Rico. The Dominican Republic is divided into 31 provinces. Additionally, the national capital, Santo Domingo, is contained within its own Distrito Nacional (National District). The provinces are divided into municipalities (municipios; singular municipio).							
	Ecuador [GAZ:00002912]	GAZ:00002912	A country in South America, bordered by Colombia on the north, by Peru on the east and south, and by the Pacific Ocean to the west. The country also includes the Galapagos Islands (Archipelago de Colon) in the Pacific, about 965 km west of the mainland. Ecuador is divided into 24 provinces, divided into 199 cantons and subdivided into parishes (or parroquias).							

Egypt [GAZ:00003934]	GAZ:00003934	A country in North Africa that includes the Sinai Peninsula, a land bridge to Asia. Egypt borders Libya to the west, Sudan to the south, and the Gaza Strip and Israel to the east. The northern coast borders the Mediterranean Sea and the island of Cyprus; the eastern coast borders the Red Sea. Egypt is divided into 26 governorates (in Arabic, called muhafazat, singular muhafazah). The governorates are further divided into regions (markazes).								
El Salvador [GAZ:00002935]	GAZ:00002935	A country in Central America, bordering the Pacific Ocean between Guatemala and Honduras. El Salvador is divided into 14 departments (departamentos), which, in turn, are subdivided into 267 municipalities (municipios).								
Equatorial Guinea [GAZ:00001091]	GAZ:00001091	A country in Central Africa. It is one of the smallest countries in continental Africa, and comprises two regions: Rio Muni, continental region including several offshore islands; and Insular Region containing Annobon island in the South Atlantic Ocean, and Bioko island (formerly Fernando Po) that contains the capital, Malabo. Equatorial Guinea is divided into seven provinces which are divided into districts.								
Eritrea [GAZ:00000581]	GAZ:00000581	A country situated in northern East Africa. It is bordered by Sudan in the west, Ethiopia in the south, and Djibouti in the southeast. The east and northeast of the country have an extensive coastline on the Red Sea, directly across from Saudi Arabia and Yemen. The Dahlak Archipelago and several of the Hanish Islands are part of Eritrea. Eritrea is divided into six regions (zobas) and subdivided into districts ("sub-zobas").								
Estonia [GAZ:00002959]	GAZ:00002959	A country in Northern Europe. Estonia has land borders to the south with Latvia and to the east with Russia. It is separated from Finland in the north by the Gulf of Finland and from Sweden in the west by the Baltic Sea. Estonia is divided into 15 counties. (maakonnad; sing. - maakond). Estonian counties are divided into rural (vallad, singular vald) and urban (linnad, singular linn; alevid, singular alev; alevikud, singular alevik) municipalities. The municipalities comprise populated places (asula or asustusüksus) - various settlements and territorial units that have no administrative function. A group of populated places form a rural municipality with local administration. Most towns constitute separate urban municipalities, while some have joined with surrounding rural municipalities.								
Eswatini [GAZ:00001099]	GAZ:00001099	A small, landlocked country in Africa embedded between South Africa in the west, north and south and Mozambique in the east. Swaziland is divided into four districts, each of which is divided into Tinkhundla (singular, Inkhundla).								
Ethiopia [GAZ:00000567]	GAZ:00000567	A country situated in the Horn of Africa that has been landlocked since the independence of its northern neighbor Eritrea in 1993. Apart from Eritrea to the north, Ethiopia is bordered by Sudan to the west, Kenya to the south, Djibouti to the northeast, and Somalia to the east. Since 1996 Ethiopia has had a tiered government system consisting of a federal government overseeing ethnically-based regional states, zones, districts (woredas), and neighborhoods (kebele). It is divided into nine ethnically-based administrative states (kililoch, singular kilil) and subdivided into sixty-eight zones and two chartered cities (astedader akababiwoch, singular astedader akababi). Addis Ababa and Dire Dawa. It is further subdivided into 550 woredas and six special woredas.								
Europa Island [GAZ:00005811]	GAZ:00005811	A 28 km2 low-lying tropical island in the Mozambique Channel, about a third of the way from southern Madagascar to southern Mozambique.								
Falkland Islands (Islas Malvinas) [GAZ:00001412]	GAZ:00001412	An archipelago in the South Atlantic Ocean, located 483 km from the coast of Argentina, 1,080 km west of the Shag Rocks (South Georgia), and 940 km north of Antarctica (Elephant Island). They consist of two main islands, East Falkland and West Falkland, together with 776 smaller islands.								
Faroe Islands [GAZ:00059206]	GAZ:00059206	An autonomous province of the Kingdom of Denmark since 1948 located in the Faroes. Administratively, the islands are divided into 34 municipalities (kommunur) within which 120 or so cities and villages lie.								
Fiji [GAZ:00006891]	GAZ:00006891	An island nation in the South Pacific Ocean east of Vanuatu, west of Tonga and south of Tuvalu. The country occupies an archipelago of about 322 islands, of which 106 are permanently inhabited, and 522 islets. The two major islands, Viti Levu and Vanua Levu, account for 87% of the population.								
Finland [GAZ:00002937]	GAZ:00002937	A Nordic country situated in the Fennoscandian region of Northern Europe. It has borders with Sweden to the west, Russia to the east, and Norway to the north, while Estonia lies to its south across the Gulf of Finland. The capital city is Helsinki. Finland is divided into six administrative provinces (laani, plural laanit). These are divided into 20 regions (maakunt), 77 subregions (seutukunta) and then into municipalities (kunta).								
France [GAZ:00003940]	GAZ:00003940	A part of the country of France that extends from the Mediterranean Sea to the English Channel and the North Sea, and from the Rhine to the Atlantic Ocean. Metropolitan France is bordered by Belgium, Luxembourg, Germany, Switzerland, Italy, Monaco, Andorra, and Spain. Due to its overseas departments.								
French Guiana [GAZ:00002516]	GAZ:00002516	An overseas department (departement d'outre-mer) of France, located on the northern coast of South America. It is bordered by Suriname, to the E, and Brazil, to the S and W, and by the North Atlantic Ocean, to the N. French Guiana is divided into 2 departmental arrondissements, 19 cantons and 22 communes.								
French Polynesia [GAZ:00002918]	GAZ:00002918	A French overseas collectivity in the southern Pacific Ocean. It is made up of several groups of Polynesian islands. French Polynesia has five administrative subdivisions (French: subdivisions administratives).								
French Southern and Antarctic Lands [GAZ:00003753]	GAZ:00003753	The French Southern and Antarctic Lands have formed a territoire d'outre-mer (an overseas territory) of France since 1955. The territory is divided into five districts.								
Gabon [GAZ:00001092]	GAZ:00001092	A country in west central Africa sharing borders with Equatorial Guinea, Cameroon, Republic of the Congo and the Gulf of Guinea. The capital and largest city is Libreville. Gabon is divided into 9 provinces and further divided into 37 departments.								

			A country in Western Africa. It is the smallest country on the African continental mainland and is bordered to the north, east, and south by Senegal, and has a small coast on the Atlantic Ocean in the west. Flowing through the centre of the country and discharging to the Atlantic Ocean is the Gambia River. The Gambia is divided into five divisions and one city (Banjul). The divisions are further subdivided into 37 districts.							
	Gambia [GAZ:00000907]	GAZ:00000907								
	Gaza Strip [GAZ:00009571]	GAZ:00009571	A Palestinian enclave on the eastern coast of the Mediterranean Sea. It borders Egypt on the southwest for 11 kilometers (6.8 mi) and Israel on the east and north along a 51 km (32 mi) border. Gaza and the West Bank are claimed by the de jure sovereign State of Palestine.							
	Georgia [GAZ:00004942]	GAZ:00004942	A Eurasian country in the Caucasus located at the east coast of the Black Sea. In the north, Georgia has a 723 km common border with Russia, specifically with the Northern Caucasus federal district. The following Russian republics/subdivisions: from west to east: border Georgia: Krasnodar Krai, Karachay-Cherkessia, Kabardino-Balkaria, North Ossetia-Alania, Ingushetia, Chechnya, Dagestan. Georgia also shares borders with Azerbaijan (322 km) to the south-east, Armenia (164 km) to the south, and Turkey (252 km) to the south-west. It is a transcontinental country, located at the juncture of Eastern Europe and Western Asia. Georgia is divided into 9 regions, 2 autonomous republics (avtonomiuri respublika), and 1 city (Kalaki). The regions are further subdivided into 69 districts (raioni).							
	Germany [GAZ:00002646]	GAZ:00002646	A country in Central Europe. It is bordered to the north by the North Sea, Denmark, and the Baltic Sea; to the east by Poland and the Czech Republic; to the south by Austria and Switzerland; and to the west by France, Luxembourg, Belgium, and the Netherlands. Germany comprises 16 states (Länder, Bundesländer), which are further subdivided into 439 districts (Kreise/Landkreise) and cities (kreisfreie Städte).							
	Ghana [GAZ:00000908]	GAZ:00000908	A country in West Africa. It borders Côte d'Ivoire to the west, Burkina Faso to the north, Togo to the east, and the Gulf of Guinea to the south. Ghana is a divided into 10 regions, subdivided into a total of 138 districts.							
	Gibraltar [GAZ:00003987]	GAZ:00003987	A British overseas territory located near the southernmost tip of the Iberian Peninsula overlooking the Strait of Gibraltar. The territory shares a border with Spain to the north.							
	Glorioso Islands [GAZ:00005808]	GAZ:00005808	A group of islands and rocks totalling 5 km2, in the northern Mozambique channel, about 160 km northwest of Madagascar.							
	Greece [GAZ:00002945]	GAZ:00002945	A country in southeastern Europe, situated on the southern end of the Balkan Peninsula. It has borders with Albania, the former Yugoslav Republic of Macedonia and Bulgaria to the north, and Turkey to the east. The Aegean Sea lies to the east and south of mainland Greece, while the Ionian Sea lies to the west. Both parts of the Eastern Mediterranean basin feature a vast number of islands. Greece consists of thirteen peripheries subdivided into a total of fifty-one prefectures (nomoi, singular nomos). There is also one autonomous area, Mount Athos, which borders the periphery of Central Macedonia.							
	Greenland [GAZ:00001507]	GAZ:00001507	A self-governing Danish province located between the Arctic and Atlantic Oceans, east of the Canadian Arctic Archipelago.							
	Grenada [GAZ:02000573]	GAZ:02000573	An island country in the West Indies in the Caribbean Sea at the southern end of the Grenadines island chain. Grenada consists of the island of Grenada itself, two smaller islands, Carriacou and Petite Martinique, and several small islands which lie to the north of the main island and are a part of the Grenadines. It is located northwest of Trinidad and Tobago, northeast of Venezuela and southwest of Saint Vincent and the Grenadines. Its size is 348.5 square kilometres (134.6 sq mi), and it had an estimated population of 112,523 in July 2020.							
	Guadeloupe [GAZ:00067142]	GAZ:00067142	An archipelago and overseas department and region of France in the Caribbean. It consists of six inhabited islands—Basse-Terre, Grande-Terre, Marie-Galante, La Désirade, and the two inhabited Îles des Saintes—as well as many uninhabited islands and outcroppings. It is south of Antigua and Barbuda and Montserrat, and north of Dominica.							
	Guam [GAZ:00003706]	GAZ:00003706	An organized, unincorporated territory of the United States in the Micronesia subregion of the western Pacific Ocean. It is the westernmost point and territory of the United States (reckoned from the geographic center of the U.S.); in Oceania, it is the largest and southernmost of the Mariana Islands and the largest island in Micronesia.							
	Guatemala [GAZ:00002936]	GAZ:00002936	A country in Central America bordered by Mexico to the northwest, the Pacific Ocean to the southwest, Belize and the Caribbean Sea to the northeast, and Honduras and El Salvador to the southeast. Guatemala is divided into 22 departments (departamentos) and sub-divided into about 332 municipalities (municipios).							
	Guernsey [GAZ:00001550]	GAZ:00001550	A British Crown Dependency in the English Channel off the coast of Normandy.							
	Guinea [GAZ:00000909]	GAZ:00000909	A nation in West Africa, formerly known as French Guinea. Guinea's territory has a curved shape, with its base at the Atlantic Ocean, inland to the east, and turning south. The base borders Guinea-Bissau and Senegal to the north, and Mali to the north and north-east; the inland part borders Côte d'Ivoire to the south-east, Liberia to the south, and Sierra Leone to the west of the southern tip.							
	Guinea-Bissau [GAZ:00000910]	GAZ:00000910	A country in western Africa, and one of the smallest nations in continental Africa. It is bordered by Senegal to the north, and Guinea to the south and east, with the Atlantic Ocean to its west. Formerly the Portuguese colony of Portuguese Guinea, upon independence, the name of its capital, Bissau, was added to the country's name in order to prevent confusion between itself and the Republic of Guinea.							
	Guyana [GAZ:00002522]	GAZ:00002522	A country in the N of South America. Guyana lies north of the equator, in the tropics, and is located on the Atlantic Ocean. Guyana is bordered to the east by Suriname, to the south and southwest by Brazil and to the west by Venezuela. Guyana is divided into 10 regions. The regions of Guyana are divided into 27 neighborhood councils.							

			A country located in the Greater Antilles archipelago on the Caribbean island of Hispaniola, which it shares with the Dominican Republic. Haiti is divided into 10 departments. The departments are further divided into 41 arrondissements, and 133 communes which serve as second and third level administrative divisions.								
	Haiti [GAZ:00003953]	GAZ:00003953									
	Heard Island and McDonald Islands [GAZ:00009718]	GAZ:00009718	An Australian external territory comprising a volcanic group of mostly barren Antarctic islands, about two-thirds of the way from Madagascar to Antarctica.								
			A republic in Central America. The country is bordered to the west by Guatemala, to the southwest by El Salvador, to the southeast by Nicaragua, to the south by the Pacific Ocean at the Gulf of Fonseca, and to the north by the Gulf of Honduras, a large inlet of the Caribbean Sea. Honduras is divided into 18 departments. The capital city is Tegucigalpa Central District of the department of Francisco Morazan.								
	Honduras [GAZ:00002894]	GAZ:00002894									
			A special administrative region of the People's Republic of China (PRC). The territory lies on the eastern side of the Pearl River Delta, bordering Guangdong province in the north and facing the South China Sea in the east, west and south. Hong Kong was a crown colony of the United Kingdom from 1842 until the transfer of its sovereignty to the People's Republic of China in 1997.								
	Hong Kong [GAZ:00003203]	GAZ:00003203									
			An uninhabited coral island located just north of the equator in the central Pacific Ocean, about 3,100 km (1,670 nm) southwest of Honolulu. The island is almost half way between Hawaii and Australia and is an unincorporated, unorganized territory of the United States, and is often included as one of the Phoenix Islands. For statistical purposes, Howland is grouped as one of the United States Minor Outlying Islands.								
	Howland Island [GAZ:00007120]	GAZ:00007120									
			A landlocked country in the Carpathian Basin of Central Europe, bordered by Austria, Slovakia, Ukraine, Romania, Serbia, Croatia, and Slovenia. Its capital is Budapest. Hungary is divided into 19 counties (megye, singular: megye). In addition, the capital city (fóváros), Budapest, is independent of any county government. The counties are further subdivided into 173 subregions (kistérségek), and Budapest is comprised of its own subregion. Since 1996, the counties and City of Budapest have been grouped into 7 regions for statistical and development purposes. These seven regions constitute NUTS second-level units of Hungary.								
	Hungary [GAZ:00002952]	GAZ:00002952									
			A country in northern Europe, comprising the island of Iceland and its outlying islands in the North Atlantic Ocean between the rest of Europe and Greenland.								
	Iceland [GAZ:00000843]	GAZ:00000843									
			A country in South Asia. Bounded by the Indian Ocean on the south, the Arabian Sea on the west, and the Bay of Bengal on the east, India has a coastline of 7,517 km. It borders Pakistan to the west; China, Nepal, and Bhutan to the north-east; and Bangladesh and Burma to the east. India is in the vicinity of Sri Lanka, the Maldives, and Indonesia in the Indian Ocean. India is a federal republic of twenty-eight states and seven Union Territories. Each state or union territory is divided into basic units of government and administration called districts. There are nearly 600 districts in India. The districts in turn are further divided into tehsils and eventually into villages.								
	India [GAZ:00002839]	GAZ:00002839									
			An archipelagic state in Southeast Asia. The country shares land borders with Papua New Guinea, East Timor and Malaysia. Other neighboring countries include Singapore, the Philippines, Australia, and the Indian territory of the Andaman and Nicobar Islands. Indonesia consists of 33 provinces, five of which have special status. The provinces are subdivided into regencies (kabupaten, distrik in Papua and West Papua Provinces) and cities (kota), which are further subdivided into subdistricts (kecamatan), and again into village groupings (either desa or kelurahan).								
	Indonesia [GAZ:00003727]	GAZ:00003727									
			A country in Central Eurasia. Iran is bounded by the Gulf of Oman and the Persian Gulf to the south and the Caspian Sea to its north. It borders Armenia, Azerbaijan, Turkmenistan to the north, Afghanistan and Pakistan to the east, and Turkey and Iraq to the west. Iran is divided into 30 provinces (ostan). The provinces are divided into counties (shahrestan), and subdivided into districts (bakhsh) and sub-districts (dehestan).								
	Iran [GAZ:00004474]	GAZ:00004474									
			A country in the Middle East spanning most of the northwestern end of the Zagros mountain range, the eastern part of the Syrian Desert and the northern part of the Arabian Desert. It shares borders with Kuwait and Saudi Arabia to the south, Jordan to the west, Syria to the northwest, Turkey to the north, and Iran to the east. It has a very narrow section of coastline at Umm Qasr on the Persian Gulf. There are two major flowing rivers: the Tigris and the Euphrates. Iraq is divided into 18 governorates (or provinces) (muhafazah). The governorates are divided into qadhas (or districts).								
	Iraq [GAZ:00004483]	GAZ:00004483									
			A country in north-western Europe. The modern sovereign state occupies five-sixths of the island of Ireland, which was partitioned in 1921. It is bordered by Northern Ireland (part of the United Kingdom) to the north, by the Atlantic Ocean to the west and by the Irish Sea to the east. Administration follows the 34 "county-level" counties and cities of Ireland. Of these twenty-nine are counties, governed by county councils while the five cities of Dublin, Cork, Limerick, Galway and Waterford have city councils, (previously known as corporations), and are administered separately from the counties bearing those names. The City of Kilkenny is the only city in the republic which does not have a "city council"; it is still a borough but not a county borough and is administered as part of County Kilkenny. Ireland is split into eight regions for NUTS statistical purposes. These are not related to the four traditional provinces but are based on the administrative counties.								
	Ireland [GAZ:00002943]	GAZ:00002943									
	Isle of Man [GAZ:00052477]	GAZ:00052477	A Crown dependency of the United Kingdom in the centre of the Irish Sea. It is not part of the United Kingdom, European Union or United Nations.								

Israel [GAZ:00002476]	GAZ:00002476	A country in Western Asia located on the eastern edge of the Mediterranean Sea. It borders Lebanon in the north, Syria in the northeast, Jordan in the east, and Egypt on the southwest. The West Bank and Gaza Strip, which are partially administrated by the Palestinian National Authority, are also adjacent. The State of Israel is divided into six main administrative districts, known as mehozot (singular mahoz). Districts are further divided into fifteen sub-districts known as nafot (singular nafa), which are themselves partitioned into fifty natural regions.							
Italy [GAZ:00002650]	GAZ:00002650	A country located on the Italian Peninsula in Southern Europe, and on the two largest islands in the Mediterranean Sea, Sicily and Sardinia. Italy shares its northern Alpine boundary with France, Switzerland, Austria and Slovenia. The independent states of San Marino and the Vatican City are enclaves within the Italian Peninsula, while Campione d'Italia is an Italian exclave in Switzerland. Italy is subdivided into 20 regions (regioni, singular regione). Five of these regions have a special autonomous status that enables them to enact legislation on some of their local matters. It is further divided into 109 provinces (province) and 8,101 municipalities (comuni).							
Jamaica [GAZ:00003781]	GAZ:00003781	A nation of the Greater Antilles. Jamaica is divided into 14 parishes, which are grouped into three historic counties that have no administrative relevance.							
Jan Mayen [GAZ:00005853]	GAZ:00005853	A volcanic island that is part of the Kingdom of Norway. It has two parts: larger Nord-Jan and smaller Sør-Jan, linked by an isthmus 2.5 km wide. It lies 600 km north of Iceland, 500 km east of Greenland and 1,000 km west of the Norwegian mainland. The island is mountainous, the highest summit being the Beerenberg volcano in the north. The isthmus is the location of the two largest lakes of the island, Sørlaguna (South Lagoon), and Nordlaguna (North Lagoon). A third lake is called Ullerenglaguna (Ullereng Lagoon). Jan Mayen was formed by the Jan Mayen hotspot.							
Japan [GAZ:00002747]	GAZ:00002747	An island country in East Asia. Located in the Pacific Ocean, it lies to the east of China, Korea and Russia, stretching from the Sea of Okhotsk in the north to the East China Sea in the south.							
Jarvis Island [GAZ:00007118]	GAZ:00007118	An uninhabited 4.5 km2 coral atoll located in the South Pacific Ocean about halfway between Hawaii and the Cook Islands. It is an unincorporated territory of the United States administered from Washington, DC by the United States Fish and Wildlife Service of the United States Department of the Interior as part of the National Wildlife Refuge system. Jarvis is one of the southern Line Islands and for statistical purposes is also grouped as one of the United States Minor Outlying Islands. Sits atop the Jarvis Seamount.							
Jersey [GAZ:00001551]	GAZ:00001551	A British Crown Dependency[6] off the coast of Normandy, France. As well as the island of Jersey itself, the bailiwick includes two groups of small islands that are no longer permanently inhabited, the Minquiers and Ecrehous, and the Pierres de Lecq.							
Johnston Atoll [GAZ:00007114]	GAZ:00007114	A 130 km2 atoll in the North Pacific Ocean about 1400 km (750 nm) west of Hawaii. There are four islands located on the coral reef platform, two natural islands, Johnston Island and Sand Island, which have been expanded by coral dredging, as well as North Island (Akau) and East Island (Hikina), artificial islands formed from coral dredging. Johnston is an unincorporated territory of the United States, administered by the US Fish and Wildlife Service of the Department of the Interior as part of the United States Pacific Island Wildlife Refuges. Sits atop Johnston Seamount.							
Jordan [GAZ:00002473]	GAZ:00002473	A country in Southwest Asia, bordered by Syria to the north, Iraq to the north-east, Israel and the West Bank to the west, and Saudi Arabia to the east and south. It shares the coastlines of the Dead Sea, and the Gulf of Aqaba with Israel, Saudi Arabia, and Egypt. Jordan is divided into 12 provinces called governorates. The Governorates are subdivided into approximately fifty-two nahias.							
Juan de Nova Island [GAZ:00005809]	GAZ:00005809	A 4.4 km2 low, flat, tropical island in the narrowest part of the Mozambique Channel, about one-third of the way between Madagascar and Mozambique.							
Kazakhstan [GAZ:00004999]	GAZ:00004999	A country in Central Asia and Europe. It is bordered by Russia, Kyrgyzstan, Turkmenistan, Uzbekistan and China. The country also borders on a significant part of the Caspian Sea. Kazakhstan is divided into 14 provinces and two municipal districts. The provinces of Kazakhstan are divided into raions.							
Kenya [GAZ:00001101]	GAZ:00001101	A country in Eastern Africa. It is bordered by Ethiopia to the north, Somalia to the east, Tanzania to the south, Uganda to the west, and Sudan to the northwest, with the Indian Ocean running along the southeast border. Kenya comprises eight provinces each headed by a Provincial Commissioner (centrally appointed by the president). The provinces (mkoa singular mikoa plural in Swahili) are subdivided into districts (wilaya). There were 69 districts as of 1999 census. Districts are then subdivided into 497 divisions (taarafa). The divisions are then subdivided into 2,427 locations (kata) and then 6,612 sublocations (kita ndogo). The City of Nairobi enjoys the status of a full administrative province.							
Kerquelen Archipelago [GAZ:00005682]	GAZ:00005682	A group of islands in the southern Indian Ocean. It is a territory of France. They are composed primarily of Tertiary flood basalts and a complex of plutonic rocks. The trachybasaltic-to-trachytic Mount Ross stratovolcano at the southern end was active during the late Pleistocene. The Rallier du Baty Peninsula on the SW tip of the island contains two youthful subglacial eruptive centers, Mont St. Allouarn and Mont Henri Rallier du Baty. An active fumarole field is related to a series of Holocene trachytic lava flows and lahars that extend beyond the icecap.							
Kingman Reef [GAZ:00007116]	GAZ:00007116	A largely submerged, uninhabited tropical atoll located in the North Pacific Ocean, roughly half way between Hawaiian Islands and American Samoa. It is the northernmost of the Northern Line Islands and lies 65 km NNW of Palmyra Atoll, the next closest island, and has the status of an unincorporated territory of the United States, administered from Washington, DC by the US Navy. Sits atop Kingman Reef Seamount.							

	Malawi [GAZ:00001105]	GAZ:00001105	A country in southeastern Africa. It is bordered by Zambia to the north-west, Tanzania to the north and Mozambique, which surrounds it on the east, south and west. Malawi is divided into three regions (the Northern, Central and Southern regions), which are further divided into twenty-seven districts, which in turn are further divided into 137 traditional authorities and 68 sub-chiefdoms.							
	Malaysia [GAZ:00003902]	GAZ:00003902	A country in southeastern Africa. It is bordered by Zambia to the north-west, Tanzania to the north and Mozambique, which surrounds it on the east, south and west. Malawi is divided into three regions (the Northern, Central and Southern regions), which are further divided into twenty-seven districts, which in turn are further divided into 137 traditional authorities and 68 sub-chiefdoms.							
	Maldives [GAZ:00006924]	GAZ:00006924	An archipelago which consists of approximately 1,196 coral islands grouped in a double chain of 27 atolls, spread over roughly 90,000 km2.							
	Mali [GAZ:00000584]	GAZ:00000584	A landlocked country in northern Africa. It borders Algeria on the north, Niger on the east, Burkina Faso and the Cote d'Ivoire on the south, Guinea on the south-west, and Senegal and Mauritania on the west. Mali is divided into 8 regions (regions) and 1 district, and subdivided into 49 cercles, totalling 288 arrondissements.							
	Malta [GAZ:00004017]	GAZ:00004017	A Southern European country and consists of an archipelago situated centrally in the Mediterranean.							
	Marshall Islands [GAZ:00007161]	GAZ:00007161	An archipelago that consists of twenty-nine atolls and five isolated islands. The most important atolls and islands form two groups: the Ratak Chain and the Ralik Chain (meaning "sunrise" and "sunset" chains). Two-thirds of the nation's population lives on Majuro (which is also the capital) and Ebeye. The outer islands are sparsely populated.							
	Martinique [GAZ:00067143]	GAZ:00067143	An island and an overseas department/region and single territorial collectivity of France.							
	Mauritania [GAZ:00000583]	GAZ:00000583	A country in North-West Africa. It is bordered by the Atlantic Ocean on the west, by Senegal on the southwest, by Mali on the east and southeast, by Algeria on the northeast, and by Western Sahara on the northwest (most of which is occupied by Morocco). The capital and largest city is Nouakchott, located on the Atlantic coast. Mauritania is divided into 12 regions (regions) and one capital district, which in turn are subdivided into 44 departments (departements).							
	Mauritius [GAZ:00003745]	GAZ:00003745	An island nation off the coast of the African continent in the southwest Indian Ocean, about 900 km east of Madagascar. In addition to the island of Mauritius, the republic includes the islands of St. Brandon, Rodrigues and the Agalega Islands.							
	Mayotte [GAZ:00003943]	GAZ:00003943	An overseas collectivity of France consisting of a main island, Grande-Terre (or Mahore), a smaller island, Petite-Terre (or Pamanzi), and several islets around these two.							
	Mexico [GAZ:00002852]	GAZ:00002852	A federal constitutional republic in North America. It is bounded on the north by the United States; on the south and west by the North Pacific Ocean; on the southeast by Guatemala, Belize, and the Caribbean Sea; and on the east by the Gulf of Mexico. The United Mexican States comprise a federation of thirty-one states and a federal district, the capital Mexico City.							
	Micronesia [GAZ:00005862]	GAZ:00005862	A subregion of Oceania, comprising hundreds of small islands in the Pacific Ocean. The Philippines lie to the northwest, Indonesia, Papua New Guinea and Melanesia to the west and southwest, and Polynesia to the east.							
	Midway Islands [GAZ:00007112]	GAZ:00007112	A 6.2 km2 atoll located in the North Pacific Ocean (near the northwestern end of the Hawaiian archipelago). It is an unincorporated territory of the United States, designated an insular area under the authority of the US Department of the Interior.							
	Moldova [GAZ:00003897]	GAZ:00003897	A landlocked country in Eastern Europe, located between Romania to the west and Ukraine to the north, east and south. Moldova is divided into thirty-two districts (raioane, singular raion); three municipalities (Balti, Chisinau, Tighina); and two autonomous regions (Gagauzia and Transnistria). The cities of Comrat and Tiraspol also have municipality status, however not as first-tier subdivisions of Moldova, but as parts of the regions of Gagauzia and Transnistria, respectively. The status of Transnistria is however under dispute. Although it is de jure part of Moldova and is recognized as such by the international community, Transnistria is not de facto under the control of the central government of Moldova. It is administered by an unrecognized breakaway authority under the name Pridnestrovian Moldovan Republic.							
	Monaco [GAZ:00003857]	GAZ:00003857	A small country that is completely bordered by France to the north, west, and south; to the east it is bordered by the Mediterranean Sea. It consists of a single municipality (commune) currently divided into 4 quarters and 10 wards.							
	Mongolia [GAZ:00008744]	GAZ:00008744	A country in East-Central Asia. The landlocked country borders Russia to the north and China to the south. The capital and largest city is Ulan Bator. Mongolia is divided into 21 aimags (provinces), which are in turn divided into 315 sums (districts). The capital Ulan Bator is administrated separately as a khot (municipality) with provincial status.							
	Montenegro [GAZ:00006898]	GAZ:00006898	A country located in Southeastern Europe. It has a coast on the Adriatic Sea to the south and borders Croatia to the west, Bosnia and Herzegovina to the northwest, Serbia and partially recognized breakaway southern province of Kosovo to the northeast and Albania to the southeast. Its capital and largest city is Podgorica. Montenegro is divided into twenty-one municipalities (opstina), and two urban municipalities, subdivisions of Podgorica municipality.							
	Montserrat [GAZ:00003988]	GAZ:00003988	A British overseas territory located in the Leeward Islands. Montserrat is divided into three parishes.							

	Morocco [GAZ:00000565]	GAZ:00000565	A country in North Africa. It has a coast on the Atlantic Ocean that reaches past the Strait of Gibraltar into the Mediterranean Sea. Morocco has international borders with Algeria to the east, Spain to the north (a water border through the Strait and land borders with two small Spanish autonomous cities, Ceuta and Melilla), and Mauritania to the south. Morocco is divided into 16 regions, and subdivided into 62 prefectures and provinces. Because of the conflict over Western Sahara, the status of both regions of "Saguia el-Hamra" and "Rio de Oro" is disputed.							
	Mozambique [GAZ:00001100]	GAZ:00001100	A country in southeastern Africa bordered by the Indian Ocean to the east, Tanzania to the north, Malawi and Zambia to the northwest, Zimbabwe to the west and Swaziland and South Africa to the southwest. Mozambique is divided into ten provinces (provincias) and one capital city (cidade capital) with provincial status. The provinces are subdivided into 129 districts (distritos). Districts are further divided in "Postos Administrativos" (Administrative Posts) and these in Localidades (Localities) the lowest geographical level of central state administration.							
	Myanmar [GAZ:00006899]	GAZ:00006899	A country in SE Asia that is bordered by China on the north, Laos on the east, Thailand on the southeast, Bangladesh on the west, and India on the northwest, with the Bay of Bengal to the southwest. Myanmar is divided into seven states and seven divisions. The administrative divisions are further subdivided into districts, which are further subdivided into townships, wards, and villages.							
	Namibia [GAZ:00001096]	GAZ:00001096	A country in southern Africa on the Atlantic coast. It shares borders with Angola and Zambia to the north, Botswana to the east, and South Africa to the south. Namibia is divided into 13 regions and subdivided into 102 constituencies.							
	Nauru [GAZ:00006900]	GAZ:00006900	An island nation in the Micronesian South Pacific. The nearest neighbour is Banaba Island in the Republic of Kiribati, 300 km due east. Nauru is divided into fourteen administrative districts which are grouped into eight electoral constituencies.							
	Navassa Island [GAZ:00007119]	GAZ:00007119	A small, uninhabited island in the Caribbean Sea, and is an unorganized unincorporated territory of the United States, which administers it through the US Fish and Wildlife Service. The island is also claimed by Haiti.							
	Nepal [GAZ:00004399]	GAZ:00004399	A landlocked nation in South Asia. It is bordered by the Tibet Autonomous Region of the People's Republic of China to the northeast and India to the south and west; it is separated from Bhutan by the Indian State of Sikkim and from Bangladesh by a small strip of the Indian State of West Bengal, known as the "Chicken's Neck". The Himalaya mountain range runs across Nepal's north and western parts, and eight of the world's ten highest mountains, including the highest, Mount Everest are situated within its territory. Nepal is divided into 14 zones and 75 districts, grouped into 5 development regions.							
	Netherlands [GAZ:00002946]	GAZ:00002946	The European part of the Kingdom of the Netherlands. It is bordered by the North Sea to the north and west, Belgium to the south, and Germany to the east. The Netherlands is divided into twelve administrative regions, called provinces. All provinces of the Netherlands are divided into municipalities (gemeenten), together 443 (2007).							
	New Caledonia [GAZ:00005206]	GAZ:00005206	A "sui generis collectivity" (in practice an overseas territory) of France, made up of a main island (Grande Terre), the Loyalty Islands, and several smaller islands. It is located in the region of Melanesia in the southwest Pacific. Administratively, the archipelago is divided into three provinces, and then into 33 communes.							
	New Zealand [GAZ:00000469]	GAZ:00000469	A nation in the south-western Pacific Ocean comprising two large islands (the North Island and the South Island) and numerous smaller islands, most notably Stewart Island/Rakiura and the Chatham Islands.							
	Nicaragua [GAZ:00002978]	GAZ:00002978	A republic in Central America. It is also the least densely populated with a demographic similar in size to its smaller neighbors. The country is bordered by Honduras to the north and by Costa Rica to the south. The Pacific Ocean lies to the west of the country, while the Caribbean Sea lies to the east. For administrative purposes it is divided into 15 departments (departamentos) and two self-governing regions (autonomous communities) based on the Spanish model. The departments are then subdivided into 153 municipios (municipalities). The two autonomous regions are Region Autonoma del Atlantico Norte and Region Autonoma del Atlantico Sur, often referred to as RAAN and RAAS, respectively. Until they were granted autonomy in 1985 they formed the single department of Zelaya.							
	Niger [GAZ:00000585]	GAZ:00000585	A landlocked country in Western Africa, named after the Niger River. It borders Nigeria and Benin to the south, Burkina Faso and Mali to the west, Algeria and Libya to the north and Chad to the east. The capital city is Niamey. Niger is divided into 7 departments and one capital district. The departments are subdivided into 36 arrondissements and further subdivided into 129 communes.							
	Nigeria [GAZ:00000912]	GAZ:00000912	A federal constitutional republic comprising thirty-six states and one Federal Capital Territory. The country is located in West Africa and shares land borders with the Republic of Benin in the west, Chad and Cameroon in the east, and Niger in the north. Its coast lies on the Gulf of Guinea, part of the Atlantic Ocean, in the south. The capital city is Abuja. Nigeria is divided into thirty-six states and one Federal Capital Territory, which are further subdivided into 774 Local Government Areas (LGAs).							
	Niue [GAZ:00006902]	GAZ:00006902	An island nation located in the South Pacific Ocean. Although self-governing, Niue is in free association with New Zealand, meaning that the Sovereign in Right of New Zealand is also Niue's head of state.							
	Norfolk Island [GAZ:00005908]	GAZ:00005908	A Territory of Australia that includes Norfolk Island and neighboring islands.							
	North Korea [GAZ:00002801]	GAZ:00002801	A state in East Asia in the northern half of the Korean Peninsula, with its capital in the city of Pyongyang. To the south and separated by the Korean Demilitarized Zone is South Korea, with which it formed one nation until division following World War II. At its northern Amnok River border are China and, separated by the Tumen River in the extreme north-east, Russia.							

			A landlocked country on the Balkan peninsula in southeastern Europe. It is bordered by Serbia and Kosovo to the north, Albania to the west, Greece to the south, and Bulgaria to the east. In 2004-08, the Republic of Macedonia was reorganised into 85 municipalities (opštini; singular opština), 10 of which comprise Greater Skopje. This is reduced from the previous 123 municipalities established in 1996-09. Prior to this, local government was organised into 34 administrative districts.							
	North Macedonia [GAZ:00006895]	GAZ:00006895								
	North Sea [GAZ:00002284]	GAZ:00002284	A sea situated between the eastern coasts of the British Isles and the western coast of Europe.							
	Northern Mariana Islands [GAZ:00003958]	GAZ:00003958	A group of 15 islands about three-quarters of the way from Hawaii to the Philippines.							
	Norway [GAZ:00002699]	GAZ:00002699	A country and constitutional monarchy in Northern Europe that occupies the western portion of the Scandinavian Peninsula. It is bordered by Sweden, Finland, and Russia. The Kingdom of Norway also includes the Arctic island territories of Svalbard and Jan Mayen. Norwegian sovereignty over Svalbard is based upon the Svalbard Treaty, but that treaty does not apply to Jan Mayen. Bouvet Island in the South Atlantic Ocean and Peter I Island and Queen Maud Land in Antarctica are external dependencies, but those three entities do not form part of the kingdom.							
	Oman [GAZ:00005283]	GAZ:00005283	A country in southwest Asia, on the southeast coast of the Arabian Peninsula. It borders the United Arab Emirates on the northwest, Saudi Arabia on the west, and Yemen on the southwest. The coast is formed by the Arabian Sea on the south and east, and the Gulf of Oman on the northeast. The country also contains Madha, an exclave enclosed by the United Arab Emirates, and Musandam, an exclave also separated by Emirati territory. Oman is divided into four governorates (muhafazah) and five regions (mintaqat). The regions are subdivided into provinces (wilayat).							
	Pakistan [GAZ:00005246]	GAZ:00005246	A country in Middle East which lies on the Iranian Plateau and some parts of South Asia. It is located in the region where South Asia converges with Central Asia and the Middle East. It has a 1,046 km coastline along the Arabian Sea in the south, and is bordered by Afghanistan and Iran in the west, India in the east and China in the far northeast. Pakistan is subdivided into four provinces and two territories. In addition, the portion of Kashmir that is administered by the Pakistani government is divided into two separate administrative units. The provinces are divided into a total of 105 zillas (districts). A zilla is further subdivided into tehsils (roughly equivalent to counties). Tehsils may contain villages or municipalities. There are over five thousand local governments in Pakistan.							
	Palau [GAZ:00006905]	GAZ:00006905	A nation that consists of eight principal islands and more than 250 smaller ones lying roughly 500 miles southeast of the Philippines.							
	Panama [GAZ:00002892]	GAZ:00002892	The southernmost country of Central America. Situated on an isthmus, some categorize it as a transcontinental nation connecting the north and south part of America. It borders Costa Rica to the north-west, Colombia to the south-east, the Caribbean Sea to the north and the Pacific Ocean to the south. Panama's major divisions are nine provinces and five indigenous territories (comarcas indígenas). The provincial borders have not changed since they were determined at independence in 1903. The provinces are divided into districts, which in turn are subdivided into sections called corregimientos. Configurations of the corregimientos are changed periodically to accommodate population changes as revealed in the census reports.							
	Papua New Guinea [GAZ:00003922]	GAZ:00003922	A country in Oceania that comprises the eastern half of the island of New Guinea and its offshore islands in Melanesia (a region of the southwestern Pacific Ocean north of Australia).							
	Paracel Islands [GAZ:00010832]	GAZ:00010832	A group of small islands and reefs in the South China Sea, about one-third of the way from Vietnam to the Philippines.							
	Paraguay [GAZ:00002933]	GAZ:00002933	A landlocked country in South America. It lies on both banks of the Paraguay River, bordering Argentina to the south and southwest, Brazil to the east and northeast, and Bolivia to the northwest, and is located in the very heart of South America. Paraguay consists of seventeen departments and one capital district (distrito capital). Each department is divided into districts.							
	Peru [GAZ:00002932]	GAZ:00002932	A country in western South America. It is bordered on the north by Ecuador and Colombia, on the east by Brazil, on the southeast by Bolivia, on the south by Chile, and on the west by the Pacific Ocean. Peru is divided into 25 regions and the province of Lima. These regions are subdivided into provinces, which are composed of districts (provincias and distritos). There are 195 provinces and 1833 districts in Peru. The Lima Province, located in the central coast of the country, is unique in that it doesn't belong to any of the twenty-five regions. The city of Lima, which is the nation's capital, is located in this province. Callao is its own region, even though it only contains one province, the Constitutional Province of Callao.							
	Philippines [GAZ:00004525]	GAZ:00004525	An archipelagic nation located in Southeast Asia. The Philippine archipelago comprises 7,107 islands in the western Pacific Ocean, bordering countries such as Indonesia, Malaysia, Palau and the Republic of China, although it is the only Southeast Asian country to share no land borders with its neighbors. The Philippines is divided into three island groups: Luzon, Visayas, and Mindanao. These are divided into 17 regions, 81 provinces, 136 cities, 1,494 municipalities and 41,995 barangays.							
	Pitcairn Islands [GAZ:00005867]	GAZ:00005867	A group of four islands in the southern Pacific Ocean. The Pitcairn Islands form the southeasternmost extension of the geological archipelago of the Tuamotus of French Polynesia.							

	Poland [GAZ:00002939]	GAZ:00002939	A country in Central Europe. Poland is bordered by Germany to the west; the Czech Republic and Slovakia to the south; Ukraine, Belarus and Lithuania to the east; and the Baltic Sea and Kaliningrad Oblast, a Russian exclave, to the north. The administrative division of Poland since 1999 has been based on three levels of subdivision. The territory of Poland is divided into voivodeships (provinces); these are further divided into powiats (counties), and these in turn are divided into gminas (communes or municipalities). Major cities normally have the status of both gmina and powiat. Poland currently has 16 voivodeships, 379 powiats (including 65 cities with powiat status), and 2,478 gminas.							
	Portugal [GAZ:00004126]	GAZ:00004126	That part of the Portuguese Republic that occupies the W part of the Iberian Peninsula, and immediately adjacent islands.							
	Puerto Rico [GAZ:00006935]	GAZ:00006935	A semi-autonomous territory composed of an archipelago in the northeastern Caribbean, east of the Dominican Republic and west of the Virgin Islands, approximately 2,000 km off the coast of Florida (the nearest of the mainland United States).							
	Qatar [GAZ:00005286]	GAZ:00005286	An Arab emirate in Southwest Asia, occupying the small Qatar Peninsula on the northeasterly coast of the larger Arabian Peninsula. It is bordered by Saudi Arabia to the south; otherwise the Persian Gulf surrounds the state. Qatar is divided into ten municipalities (Arabic: baladiyah), which are further divided into zones (districts).							
	Republic of the Congo [GAZ:00001088]	GAZ:00001088	A country in Central Africa. It is bordered by Gabon, Cameroon, the Central African Republic, the Democratic Republic of the Congo, the Angolan exclave province of Cabinda, and the Gulf of Guinea. The Republic of the Congo is divided into 10 regions (regions) and one commune, the capital Brazzaville. The regions are subdivided into forty-six districts.							
	Reunion [GAZ:00003945]	GAZ:00003945	An island, located in the Indian Ocean east of Madagascar, about 200 km south west of Mauritius, the nearest island.							
	Romania [GAZ:00002951]	GAZ:00002951	A country in Southeastern Europe. It shares a border with Hungary and Serbia to the west, Ukraine and the Republic of Moldova to the northeast, and Bulgaria to the south. Romania has a stretch of sea coast along the Black Sea. It is located roughly in the lower basin of the Danube and almost all of the Danube Delta is located within its territory. Romania is divided into forty-one counties (judete), as well as the municipality of Bucharest (Bucuresti) - which is its own administrative unit. The country is further subdivided into 319 cities and 2686 communes (rural localities).							
	Ross Sea [GAZ:00023304]	GAZ:00023304	A large embayment of the Southern Ocean, extending deeply into Antarctica between Cape Adare, at 170degE, on the west and Cape Colbeck on the east, at 158degW.							
	Russia [GAZ:00002721]	GAZ:00002721	A transcontinental country extending over much of northern Eurasia. Russia shares land borders with the following countries (counter-clockwise from northwest to southeast): Norway, Finland, Estonia, Latvia, Lithuania (Kaliningrad Oblast), Poland (Kaliningrad Oblast), Belarus, Ukraine, Georgia, Azerbaijan, Kazakhstan, China, Mongolia and North Korea. The Russian Federation comprises 83 federal subjectsm 46 oblasts(provinces), 21 republics, 9 krais (territories), 4 autonomous okrugs (autonomous districts), one autonomous oblast, and two federal cities. The federal subjects are grouped into seven federal districts. These subjects are divided into districts (raions), cities/towns and urban-type settlements, and, at level 4, selsoviets (rural councils), towns and urban-type settlements under the jurisdiction of the district and city districts.							
	Rwanda [GAZ:00001087]	GAZ:00001087	A small landlocked country in the Great Lakes region of east-central Africa, bordered by Uganda, Burundi, the Democratic Republic of the Congo and Tanzania. Rwanda is divided into five provinces (intara) and subdivided into thirty districts (akarere). The districts are divided into sectors (imirenge).							
	Saint Helena [GAZ:00000849]	GAZ:00000849	An island of volcanic origin and a British overseas territory in the South Atlantic Ocean.							
	Saint Kitts and Nevis [GAZ:00006906]	GAZ:00006906	A federal two-island nation in the West Indies. Located in the Leeward Islands. Saint Kitts and Nevis are geographically part of the Leeward Islands. To the north-northwest lie the islands of Saint Eustatius, Saba, Saint Barthelemy, and Saint-Martin/Sint Maarten. To the east and northeast are Antigua and Barbuda, and to the southeast is the small uninhabited island of Redonda, and the island of Montserrat. The federation of Saint Kitts and Nevis is divided into fourteen parishes: nine divisions on Saint Kitts and five on Nevis.							
	Saint Lucia [GAZ:00006909]	GAZ:00006909	An island nation in the eastern Caribbean Sea on the boundary with the Atlantic Ocean.							
	Saint Pierre and Miquelon [GAZ:00003942]	GAZ:00003942	An Overseas Collectivity of France located in a group of small islands in the North Atlantic Ocean, the main ones being Saint Pierre and Miquelon, 25 km off the coast of Newfoundland, Canada. Saint Pierre and Miquelon became an overseas department in 1976, but its status changed to that of an Overseas collectivity in 1985.							
	Saint Martin [GAZ:00005841]	GAZ:00005841	An overseas collectivity of France that came into being on 2007-02-22, encompassing the northern parts of the island of Saint Martin and neighboring islets. The southern part of the island, Sint Maarten, is part of the Netherlands Antilles. Formerly, with Saint-Barthelemy, an arrondissement of Guadeloupe.							
	Saint Vincent and the Grenadines [GAZ:02000565]	GAZ:02000565	An island nation in the Lesser Antilles chain of the Caribbean Sea.							
	Samoa [GAZ:00006910]	GAZ:00006910	A country governing the western part of the Samoan Islands archipelago in the South Pacific Ocean. Samoa is made up of eleven itumalo (political districts).							
	San Marino [GAZ:00003102]	GAZ:00003102	A country in the Apennine Mountains. It is a landlocked enclave, completely surrounded by Italy. San Marino is an enclave in Italy, on the border between the regioni of Emilia Romagna and Marche. Its topography is dominated by the Apennines mountain range. San Marino is divided into nine municipalities, known locally as Castelli (singular castello).							

Sao Tome and Principe [GAZ:00006927]	GAZ:00006927	An island nation in the Gulf of Guinea, off the western equatorial coast of Africa. It consists of two islands: Sao Tome and Principe, located about 140 km apart and about 250 and 225 km respectively, off of the northwestern coast of Gabon. Both islands are part of an extinct volcanic mountain range. Sao Tome and Principe is divided into 2 provinces: Principe, Sao Tome. The provinces are further divided into seven districts, six on Sao Tome and one on Principe (with Principe having self-government since 1995-04-29).								
Saudi Arabia [GAZ:00005279]	GAZ:00005279	A country on the Arabian Peninsula. It is bordered by Jordan on the northwest, Iraq on the north and northeast, Kuwait, Qatar, Bahrain, and the United Arab Emirates on the east, Oman on the southeast, and Yemen on the south. The Persian Gulf lies to the northeast and the Red Sea to its west. Saudi Arabia is divided into 13 provinces or regions (manatiq; singular mintaqah). Each is then divided into Governorates.								
Senegal [GAZ:00000913]	GAZ:00000913	A country south of the Senegal River in western Africa. Senegal is bounded by the Atlantic Ocean to the west, Mauritania to the north, Mali to the east, and Guinea and Guinea-Bissau to the south. The Gambia lies almost entirely within Senegal, surrounded on the north, east and south; from its western coast Gambia's territory follows the Gambia River more than 300 km inland. Dakar is the capital city of Senegal, located on the Cape Verde Peninsula on the country's Atlantic coast. Senegal is subdivided into 11 regions and further subdivided into 34 Departements, 103 Arrondissements (neither of which have administrative function) and by Collectivites Locales.								
Serbia [GAZ:00002957]	GAZ:00002957	A landlocked country in Central and Southeastern Europe, covering the southern part of the Pannonian Plain and the central part of the Balkan Peninsula. It is bordered by Hungary to the north; Romania and Bulgaria to the east; Republic of Macedonia, Montenegro to the south; Croatia and Bosnia and Herzegovina to the west. The capital is Belgrade. Serbia is divided into 29 districts plus the City of Belgrade. The districts and the city of Belgrade are further divided into municipalities. Serbia has two autonomous provinces: Kosovo and Metohija in the south (5 districts, 30 municipalities), and Vojvodina in the north (7 districts, 46 municipalities).								
Seychelles [GAZ:00006922]	GAZ:00006922	An archipelagic island country in the Indian Ocean at the eastern edge of the Somali Sea. It consists of 115 islands.								
Sierra Leone [GAZ:00000914]	GAZ:00000914	A country in West Africa. It is bordered by Guinea in the north and east, Liberia in the southeast, and the Atlantic Ocean in the southwest and west. The Republic of Sierra Leone is composed of 3 provinces and one area called the Western Area; the provinces are further divided into 12 districts. The Western Area is also divided into 2 districts.								
Singapore [GAZ:00003923]	GAZ:00003923	An island nation located at the southern tip of the Malay Peninsula. It lies 137 km north of the Equator, south of the Malaysian State of Johor and north of Indonesia's Riau Islands. Singapore consists of 63 islands, including mainland Singapore. There are two man-made connections to Johor, Malaysia, Johor-Singapore Causeway in the north, and Tuas Second Link in the west. Since 2001-11-24, Singapore has had an administrative subdivision into 5 districts. It is also divided into five Regions, urban planning subdivisions with no administrative role.								
Sint Maarten [GAZ:00012579]	GAZ:00012579	One of five island areas (Eilandgebieden) of the Netherlands Antilles, encompassing the southern half of the island of Saint Martin/Sint Maarten.								
Slovakia [GAZ:00002956]	GAZ:00002956	A landlocked country in Central Europe. The Slovak Republic borders the Czech Republic and Austria to the west, Poland to the north, Ukraine to the east and Hungary to the south. The largest city is its capital, Bratislava. Slovakia is subdivided into 8 kraje (singular - kraj, usually translated as regions. The kraje are subdivided into many okresy (singular okres, usually translated as districts). Slovakia currently has 79 districts.								
Slovenia [GAZ:00002955]	GAZ:00002955	A country in southern Central Europe bordering Italy to the west, the Adriatic Sea to the southwest, Croatia to the south and east, Hungary to the northeast, and Austria to the north. The capital of Slovenia is Ljubljana. As of 2005-05 Slovenia is divided into 12 statistical regions for legal and statistical purposes. Slovenia is divided into 210 local municipalities, eleven of which have urban status.								
Solomon Islands [GAZ:00005275]	GAZ:00005275	A nation in Melanesia, east of Papua New Guinea, consisting of nearly one thousand islands. Together they cover a land mass of 28,400 km2. The capital is Honiara, located on the island of Guadalcanal.								
Somalia [GAZ:00001104]	GAZ:00001104	A country located in the Horn of Africa. It is bordered by Djibouti to the northwest, Kenya on its southwest, the Gulf of Aden with Yemen on its north, the Indian Ocean at its east, and Ethiopia to the west. Prior to the civil war, Somalia was divided into eighteen regions (gobollada, singular gobol), which were in turn subdivided into districts. On a de facto basis, northern Somalia is now divided up among the quasi-independent states of Puntland, Somaliland, Galmudug and Maakhir.								
South Africa [GAZ:00001094]	GAZ:00001094	A country located at the southern tip of Africa. It borders the Atlantic and Indian oceans and Namibia, Botswana, Swazana, Zimbabwe, Mozambique, Swaziland, and Lesotho, an independent enclave surrounded by South African territory. It is divided into nine provinces which are further subdivided into 52 districts: 6 metropolitan and 46 district municipalities. The 46 district municipalities are further subdivided into 231 local municipalities. The district municipalities also contain 20 district management areas (mostly game parks) that are directly governed by the district municipalities. The six metropolitan municipalities perform the functions of both district and local municipalities.								
South Georgia and the South Sandwich Islands [GAZ:00003990]	GAZ:00003990	A British overseas territory in the southern Atlantic Ocean. It consists of South Georgia and the Sandwich Islands, some 640 km to the SE.								
South Korea [GAZ:00002802]	GAZ:00002802	A republic in East Asia, occupying the southern half of the Korean Peninsula. South Korea is divided into 8 provinces (do), 1 special autonomous province (teukbyeol jachido), 6 metropolitan cities (gwangyeoksi), and 1 special city (teukbyeosil). These are further subdivided into a variety of smaller entities, including cities (si), counties (gun), districts (gu), towns (eup), townships (myeon), neighborhoods (dong) and villages (ri).								

	South Sudan [GAZ:00233439]	GAZ:00233439	A state located in Africa with Juba as its capital city. It's bordered by Ethiopia to the east, Kenya, Uganda, and the Democratic Republic of the Congo to the south, and the Central African Republic to the west and Sudan to the North. Southern Sudan includes the vast swamp region of the Sudd formed by the White Nile, locally called the Bahr el Jebel.								
	Spain [GAZ:00000591]	GAZ:00000591	That part of the Kingdom of Spain that occupies the Iberian Peninsula plus the Balearic Islands. The Spanish mainland is bordered to the south and east almost entirely by the Mediterranean Sea (except for a small land boundary with Gibraltar); to the north by France, Andorra, and the Bay of Biscay; and to the west by the Atlantic Ocean and Portugal.								
	Spratty Islands [GAZ:00010831]	GAZ:00010831	A group of >100 islands located in the Southeastern Asian group of reefs and islands in the South China Sea, about two-thirds of the way from southern Vietnam to the southern Philippines.								
	Sri Lanka [GAZ:00003924]	GAZ:00003924	An island nation in South Asia, located about 31 km off the southern coast of India. Sri Lanka is divided into 9 provinces and 25 districts. Districts are divided into Divisional Secretariats.								
	State of Palestine [GAZ:00002475]	GAZ:00002475	The territory under the administration of the Palestine National Authority, as established by the Oslo Accords. The PNA divides the Palestinian territories into 16 governorates.								
	Sudan [GAZ:00000560]	GAZ:00000560	A country in North Africa. It is bordered by Egypt to the north, the Red Sea to the northeast, Eritrea and Ethiopia to the east, Kenya and Uganda to the southeast, Democratic Republic of the Congo and the Central African Republic to the southwest, Chad to the west and Libya to the northwest. Sudan is divided into twenty-six states (wilayat, singular wilayah) which in turn are subdivided into 133 districts.								
	Suriname [GAZ:00002525]	GAZ:00002525	A country in northern South America. It is situated between French Guiana to the east and Guyana to the west. The southern border is shared with Brazil and the northern border is the Atlantic coast. The southernmost border with French Guiana is disputed along the Marowijne river. Suriname is divided into 10 districts, each of which is divided into Ressorten.								
	Svalbard [GAZ:00005396]	GAZ:00005396	An archipelago of continental islands lying in the Arctic Ocean north of mainland Europe, about midway between Norway and the North Pole.								
	Sweden [GAZ:00002729]	GAZ:00002729	A Nordic country on the Scandinavian Peninsula in Northern Europe. It has borders with Norway (west and north) and Finland (northeast). Sweden is a unitary state, currently divided into twenty-one counties (lan). Each county further divides into a number of municipalities or kommuner, with a total of 290 municipalities in 2004.								
	Switzerland [GAZ:00002941]	GAZ:00002941	A federal republic in Europe. Switzerland is bordered by Germany, France, Italy, Austria and Liechtenstein. The Swiss Confederation consists of 26 cantons. The Cantons comprise a total of 2,889 municipalities. Within Switzerland there are two enclaves: Busingen belongs to Germany, Campione d'Italia belongs to Italy.								
	Syria [GAZ:00002474]	GAZ:00002474	A country in Southwest Asia, bordering Lebanon, the Mediterranean Sea and the island of Cyprus to the west, Israel to the southwest, Jordan to the south, Iraq to the east, and Turkey to the north. Syria has fourteen governorates, or muhafazat (singular: muhafazah). The governorates are divided into sixty districts, or manatiq (singular: mintaqah), which are further divided into sub-districts, or nawahi (singular: nahia).								
	Taiwan [GAZ:00005341]	GAZ:00005341	A state in East Asia with de facto rule of the island of Tawain and adjacent territory. The Republic of China currently administers two historical provinces of China (one completely and a small part of another one) and centrally administers two direct-controlled municipalities.								
	Tajikistan [GAZ:00006912]	GAZ:00006912	A mountainous landlocked country in Central Asia. Afghanistan borders to the south, Uzbekistan to the west, Kyrgyzstan to the north, and People's Republic of China to the east. Tajikistan consists of 4 administrative divisions. These are the provinces (viloyat) of Sughd and Khatlon, the autonomous province of Gorno-Badakhshan (abbreviated as GBAO), and the Region of Republican Subordination (RRP, Raiyoni Respublikanskogo Podchineniya in Russian; formerly known as Karotegin Province). Each region is divided into several districts (nohiya or raion).								
	Tanzania [GAZ:00001103]	GAZ:00001103	A country in East Africa bordered by Kenya and Uganda on the north, Rwanda, Burundi and the Democratic Republic of the Congo on the west, and Zambia, Malawi and Mozambique on the south. To the east it borders the Indian Ocean. Tanzania is divided into 26 regions (mkoa), twenty-one on the mainland and five on Zanzibar (three on Unguja, two on Pemba). Ninety-eight districts (wilaya), each with at least one council, have been created to further increase local authority; the councils are also known as local government authorities. Currently there are 114 councils operating in 99 districts; 22 are urban and 92 are rural. The 22 urban units are further classified as city councils (Dar es Salaam and Mwanza), municipal councils (Arusha, Dodoma, Iringa, Kilimanjaro, Mbeya, Morogoro, Shinyanga, Tabora, and Tanga) or town councils (the remaining eleven communities).								
	Thailand [GAZ:00003744]	GAZ:00003744	A country in Southeast Asia. To its east lie Laos and Cambodia; to its south, the Gulf of Thailand and Malaysia; and to its west, the Andaman Sea and Burma. Its capital and largest city is Bangkok. Thailand is divided into 75 provinces (changwat), which are gathered into 5 groups of provinces by location. There are also 2 special governed districts: the capital Bangkok (Krung Thep Maha Nakhon) and Pattaya, of which Bangkok is at provincial level and thus often counted as a 76th province.								
	Timor-Leste [GAZ:00006913]	GAZ:00006913	A country in Southeast Asia. It comprises the eastern half of the island of Timor, the nearby islands of Atauro and Jaco, and Oecussi-Ambeno, an exclave on the northwestern side of the island, within Indonesian West Timor. The small country of 15,410 km2 is located about 640 km northwest of Darwin, Australia. East Timor is divided into thirteen administrative districts, are subdivided into 65 subdistricts, 443 sucos and 2,336 towns, villages and hamlets.								

	Togo [GAZ:00000915]	GAZ:00000915	A country in West Africa bordering Ghana in the west, Benin in the east and Burkina Faso in the north. In the south, it has a short Gulf of Guinea coast, on which the capital Lome is located.							
	Tokelau [GAZ:00260188]	GAZ:00260188	A dependent territory of New Zealand in the southern Pacific Ocean. It consists of three tropical coral atolls: Atafu, Nukunonu, and Fakaofu. They have a combined land area of 10 km2 (4 sq mi).							
	Tonga [GAZ:00006916]	GAZ:00006916	A Polynesian country, and also an archipelago comprising 169 islands, of which 36 are inhabited. The archipelago's total surface area is about 750 square kilometres (290 sq mi) scattered over 700,000 square kilometres (270,000 sq mi) of the southern Pacific Ocean.							
	Trinidad and Tobago [GAZ:00003767]	GAZ:00003767	An archipelagic state in the southern Caribbean, lying northeast of the South American nation of Venezuela and south of Grenada in the Lesser Antilles. It also shares maritime boundaries with Barbados to the northeast and Guyana to the southeast. The country covers an area of 5,128 km2and consists of two main islands, Trinidad and Tobago, and 21 smaller islands.							
	Tromelin Island [GAZ:00005812]	GAZ:00005812	A low, flat 0.8 km2 island in the Indian Ocean, about 350 km east of Madagascar. Tromelin is a low, scrub-covered sandbank about 1,700 m long and 700 m wide, surrounded by coral reefs. The island is 7 m high at its highest point.							
	Tunisia [GAZ:00000562]	GAZ:00000562	A country situated on the Mediterranean coast of North Africa. It is bordered by Algeria to the west and Libya to the southeast. Tunisia is subdivided into 24 governorates, divided into 262 "delegations" or "districts" (mutamadiyat), and further subdivided into municipalities (shaykhat).							
	Turkey [GAZ:00000558]	GAZ:00000558	A Eurasian country that stretches across the Anatolian peninsula in western Asia and Thrace (Rumelia) in the Balkan region of southeastern Europe. Turkey borders eight countries: Bulgaria to the northwest; Greece to the west, Georgia to the northeast; Armenia, Azerbaijan (the exclave of Nakhichevan), and Iran to the east; and Iraq and Syria to the southeast. The Mediterranean Sea and Cyprus are to the south; the Aegean Sea and Archipelago are to the west; and the Black Sea is to the north. Separating Anatolia and Thrace are the Sea of Marmara and the Turkish Straits (the Bosphorus and the Dardanelles), which are commonly reckoned to delineate the border between Asia and Europe, thereby making Turkey transcontinental. The territory of Turkey is subdivided into 81 provinces for administrative purposes. The provinces are organized into 7 regions for census purposes; however, they do not represent an administrative structure. Each province is divided into districts, for a total of 923 districts.							
	Turkmenistan [GAZ:00005018]	GAZ:00005018	A country in Central Asia. It is bordered by Afghanistan to the southeast, Iran to the southwest, Uzbekistan to the northeast, Kazakhstan to the northwest, and the Caspian Sea to the west. It was a constituent republic of the Soviet Union, the Turkmen Soviet Socialist Republic. Turkmenistan is divided into five provinces or welayatlar (singular - welayat) and one independent city.							
	Turks and Caicos Islands [GAZ:00003955]	GAZ:00003955	A British Overseas Territory consisting of two groups of tropical islands in the West Indies. The Turks and Caicos Islands are divided into six administrative districts (two in the Turks Islands and four in the Caicos Islands).							
	Tuvalu [GAZ:00009715]	GAZ:00009715	A Polynesian island nation located in the Pacific Ocean midway between Hawaii and Australia.							
	United States of America [GAZ:00002459]	GAZ:00002459	A federal constitutional republic comprising fifty states and a federal district. The country is situated mostly in central North America, where its forty-eight contiguous states and Washington, DC, the capital district, lie between the Pacific and Atlantic Oceans, bordered by Canada to the north and Mexico to the south. The State of Alaska is in the northwest of the continent, with Canada to its east and Russia to the west across the Bering Strait, and the State of Hawaii is in the mid-Pacific. The United States also possesses several territories, or insular areas, that are scattered around the Caribbean and Pacific. The states are divided into smaller administrative regions, called counties in most states, exceptions being Alaska (parts of the state are organized into subdivisions called boroughs; the rest of the state's territory that is not included in any borough is divided into "census areas"), and Louisiana (which is divided into county-equivalents that are called parishes). There are also independent cities which are within particular states but not part of any particular county or consolidated city-counties. Another type of organization is where the city and county are unified and function as an independent city. There are thirty-nine independent cities in Virginia and other independent cities or city-counties are San Francisco, California, Baltimore, Maryland, St. Louis, Missouri, Denver, Colorado and Carson City, Nevada. Counties can include a number of cities, towns, villages, or hamlets, or sometimes just a part of a city. Counties have varying degrees of political and legal significance, but they are always administrative divisions of the state. Counties in many states are further subdivided into townships, which, by definition, are administrative divisions of a county. In some states, such as Michigan, a township can file a charter with the state government, making itself into a "charter township", which is a type of mixed municipal and township status (giving the township some of the rights of a city without all of the responsibilities), much in the way a metropolitan municipality is a mixed municipality and county.							
	Uganda [GAZ:00001102]	GAZ:00001102	A landlocked country in East Africa, bordered on the east by Kenya, the north by Sudan, on the west by the Democratic Republic of the Congo, on the southwest by Rwanda, and on the south by Tanzania. The southern part of the country includes a substantial portion of Lake Victoria, within which it shares borders with Kenya and Tanzania. Uganda is divided into 80 districts, spread across four administrative regions: Northern, Eastern, Central and Western. The districts are subdivided into counties.							

[illegible]

	Wastewater secondary sedimentation [ENVO:03501449]	ENVO:03501449	A wastewater treatment process which removes biomass produced in aeration from influent through gravitational force.							
	Wastewater sludge removal [GENEPIO:0101201]	GENEPIO:0101201	A wastewater treatment process which removes large objects such as rags, paper, plastics, and metals to prevent damage and clogging of downstream equipment, piping, and appurtenances.							
	Wastewater sludge dewatering [GENEPIO:0101202]	GENEPIO:0101202	A wastewater treatment process which mechanically reduces the water content of wastewater sludge using equipment like centrifuges or belt presses, resulting in a semi-solid material that is easier to handle and transport			GENEPIO:0100881				
	Wastewater sludge drying [GENEPIO:0101718]	GENEPIO:0101718	A wastewater treatment process which further reduces the moisture content of dewatered sludge, typically through thermal or air drying methods, producing a dry, stable material for easier disposal or use.							
sample volume measurement unit menu										
	microliter (uL) [UO:0000101]	UO:0000101	A metric unit of volume equivalent to one thousandth of a cubic centimeter or one millicenth of a liter.							
	milliliter (mL) [UO:0000098]	UO:0000098	A metric unit of volume equivalent to one cubic centimeter or one thousandth of a liter.							
	liter (L) [UO:0000099]	UO:0000099	A metric unit of volume equivalent to 1000 cubic centimeters							
sample storage duration unit menu										
	Second [UO:0000010]	UO:0000010	A time unit which is equal to the duration of 9 192 631 770 periods of the radiation corresponding to the transition between the two hyperfine levels of the ground state of the caesium 133 atom.							
	Minute [UO:0000031]	UO:0000031	A time unit which is equal to 60 seconds.							
	Hour [UO:0000032]	UO:0000032	A time unit which is equal to 60 minutes.							
	Day [UO:0000033]	UO:0000033	A time unit which is equal to 24 hours.							
	Week [UO:0000034]	UO:0000034	A time unit which is equal to 7 days.							
	Month [UO:0000035]	UO:0000035	A time unit which is equal to approximately 4-4.5 weeks or 28-31 days.							
	Year [UO:0000036]	UO:0000036	A time unit which is equal to 365 days, or 366 days during a leap year.							
specimen processing menu										
	Concentration [OBI:0600041]	OBI:0600041	A process used to increase the density of a material of interest by removing other materials in the entity containing the material of interest.							
	Centrifugation [OBI:0302886]	OBI:0302886	A process separating molecules by size or density using centrifugal forces generated by a spinning rotor.							
	Filtration [OBI:0302885]	OBI:0302885	A process which separates components suspended in a fluid based on granularity properties relying on a filter device.							
	Flocculation [NCIT:C154798]	NCIT:C154798	A process in which microscopic particles in suspension aggregate to form loosely clumped masses that are often macroscopically observable.							
	Magnetic nanobead binding [GENEPIO:0100886]	GENEPIO:0100886	A process that uses nanobeads to bind to particles or microbes of interest.							
	Precipitation [OBI:0600034]	OBI:0600034	A protocol application to cause a material to precipitate (becoming a solid) out of solution.							
	Gravity separation [GENEPIO:0101011]	GENEPIO:0101011	A process through which solids are separated from a liquid by allowing the solids to settle by gravity.							
	Pasteurization [IDO:0100170]	IDO:0100170	A planned process of heating a liquid entity, to a specific temperature of a defined length of time span, and then cooling it immediately. It has an objective of prevent the microbial's growth in the liquid entity, which is a specific input of this planned process.							
	Growth in enrichment broth [GENEPIO:0101012]	GENEPIO:0101012	A process in which microorganisms, present in a collected sample, undergo cultivation within a nutrient-rich liquid medium, that facilitates growth.							
	Pooling specimens [OBI:0600016]	OBI:0600016	Physical combination of several instances of like material.							
	Technical replicate process [GENEPIO:0101021]	GENEPIO:0101021	A specimen collection process in which a replicate(s) is collected to assess technical variation within an experiment. For technical replicates the same BioSample is used e.g. the same pool of RNA is used to assess technical (as opposed to biological) variation.							
	Biological replicate process [GENEPIO:0101022]	GENEPIO:0101022	A specimen collection process in which a replicate(s) is collected in parallel to assess for biological variation within an experiment. Biological replicates would have distinct BioSamples records.							
environmental site menu										
	Correctional facility [ENVO:01001481]	ENVO:01001481	A prison facility which is owned and operated by a state.							
	Healthcare facility [ENVO:03501134]	ENVO:03501134	A human construction in which healthcare is provided.							
	Hospital [ENVO:00002173]	ENVO:00002173	A building in which health care services are provided by specialized staff and equipment.							
	Clinic [ENVO:03501182]	ENVO:03501182	A facility which is used to provide treatment, remedial work, and/or instruction.							
	Educational facility [ENVO:03501129]	ENVO:03501129	A human construction in which people are educated.							
	Daycare facility [ENVO:03501335]	ENVO:03501335	A child care facility in which day care services are provided, by specialized staff and equipment, to a human child during the working day.							
	School [ENVO:03501130]	ENVO:03501130	An institutional building in which students are educated.							
	College or university [ENVO:03501131]	ENVO:03501131	An institutional building in which university services are performed.							
	Commercial building [ENVO:01001222]	ENVO:01001222	A building which is primarily used to facilitate the buying or selling of goods or services. "Commerce includes legal, economic, political, social, cultural and technological systems that are in operation in any country or internationally."							
	Office [ENVO:01001221]	ENVO:01001221	A commercial building which contains parts used as workplaces primarily for administrative and managerial workers. "An office building will be divided into sections for different companies or may be dedicated to one company. In either case, each company will typically have a reception area, one or several meeting rooms, singular or open-plan offices, as well as toilets."							
	Restaurant [ENVO:01000934]	ENVO:01000934	A building within which food and drink are prepared and served to customers in exchange for money or other goods and/or services.							

	Shopping mall [ENVO:03501207]	ENVO:03501207	A shopping center in which a large indoor pedestrian promenade provides access to stores and other facilities.						
	Residential building [ENVO:01000933]	ENVO:01000933	A human house which serves as a long-term shelter for its inhabitants and within which they store personal property.						
	Homeless shelter [ENVO:03501133]	ENVO:03501133	An institutional building which temporarily houses homeless people.						
	Long-term care facility [ENVO:01000932]	ENVO:01000932	A building in which nursing aides and skilled nurses provide care and treatment to residents who have significant difficulty coping with the required activities of daily living.						
	Transport hub [ENVO:03501117]	ENVO:03501117	A place where passengers and cargo are exchanged between vehicles or/and between transport modes.						
	Airport [ENVO:03501122]	ENVO:03501122	A human construction with extended facilities from which aircraft flight operations take place.						
	Farm [ENVO:00000078]	ENVO:00000078	An area of land which is used for the cultivation of crops or grazing of livestock, including any agricultural constructions therein.						
	Refugee camp [NCIT:C85867]	NCIT:C85867	A temporary, often makeshift shelter for persons displaced by war, political oppression, or for religious beliefs.						
	Road [ENVO:00000064]	ENVO:00000064	An open way for the passage of vehicles, persons, or animals on land.						
	Roadside [ENVO:01000447]	ENVO:01000447	An environmental zone of varying area which is adjacent to a road.						
	Industrial plant [ENVO:00003861]	ENVO:00003861	A building within which goods are produced and, optionally, stored or within which services are rendered.						
	Pharmaceutical manufacturing plant [ENVO:03501450]	ENVO:03501450	An industrial building in which pharmaceutical drugs are synthesised and processed on an industrial scale.						
	Processing plant [ENVO:03501295]	ENVO:03501295	A factory where raw materials are treated or prepared for final processing.						
	Meat processing plant [ENVO:03501297]	ENVO:03501297	A processing plant for slaughtering, processing, packaging, labelling, handling, and storing of food animal carcasses, parts of carcasses, and meat products.						
	Body of water [ENVO:00000063]	ENVO:00000063	An accumulation of water of varying size.						
	Surface water [ENVO:00002042]	ENVO:00002042	Water that is found on the surface of an astronomical object.						
	Lake [ENVO:00000020]	ENVO:00000020	A body of water or other liquid of considerable size contained in a depression on a landmass.						
	Stream [ENVO:00000023]	ENVO:00000023	A watercourse which is linear and flows across the solid portion of a planetary surface.						
	River [ENVO:00000022]	ENVO:00000022	A stream which, through permanent or seasonal flow processes, moves from elevated land towards lower elevations through a definite channel and empties either into a sea, lake, or another river or ends on land as bed seepage and evapotranspiration exceed water supply.						
	Ocean [ENVO:00000015]	ENVO:00000015	A marine water body which constitutes the majority of an astronomical body's hydrosphere.						
	Sea [ENVO:00000016]	ENVO:00000016	A large expanse of saline water usually connected with an ocean.						
	Canal [ENVO:00000014]	ENVO:00000014	Artificial watercourse with no flow or a controlled flow used for navigation, drainage or irrigation.						
	Reservoir [ENVO:00000025]	ENVO:00000025	An artificial body of water, often contained by a dam, constructed for the purpose of water storage.						
	Ground water [ENVO:01001004]	ENVO:01001004	Underground water which is located in pore spaces found in rock or unconsolidated deposits such as soil, clay, or gravel.						
	Well [ENVO:00000026]	ENVO:00000026	A cylindrical hole, pit, or tunnel drilled or dug down to a depth from which water, oil, or gas can be pumped or brought to the surface.						
	Spring [ENVO:00000027]	ENVO:00000027	A surface landform which provides an egress for groundwater or steam to flow out of the ground.						
	Wastewater treatment plant [ENVO:00002272]	ENVO:00002272	A plant in which wastewater is treated.						
	Influent pump station [ENVO:03501465]	ENVO:03501465	A facility within a wastewater treatment plant designed to receive and lift incoming wastewater (influent) to a higher elevation for subsequent treatment processes. The influent pump station typically houses pumps, controls, and associated equipment necessary to move wastewater through the treatment process.						
	Grit chamber [ENVO:03501467]	ENVO:03501467	A physical structure or equipment within a wastewater treatment plant where grit and other heavy inorganic particles are removed from the influent through sedimentation. The grit chamber helps protect downstream equipment from abrasion and reduces the accumulation of grit in subsequent treatment processes.						
	Communitor [ENVO:03501472]	ENVO:03501472	A mechanical device designed to reduce the size of solid materials in wastewater. It uses rotating drums or cutting blades to shred large debris into smaller pieces, protecting downstream equipment and enhancing the efficiency of subsequent treatment processes.						
	Primary clarifier [ENVO:03501468]	ENVO:03501468	A large, sedimentation tank in a wastewater treatment plant where the primary stage of solids separation occurs. In the primary clarifier, suspended solids settle to the bottom as sludge, while lighter materials, such as oils and greases, rise to the surface for removal.						
	Aeration tank [ENVO:03501469]	ENVO:03501469	A tank or basin in a wastewater treatment plant where oxygen is introduced into the wastewater to promote the growth of aerobic microorganisms. These microorganisms break down organic pollutants in the water, facilitating the biological treatment process. The aeration tank is essential for reducing the organic load before the water moves to subsequent treatment stages.						
	Secondary clarifier [ENVO:03501471]	ENVO:03501471	A sedimentation tank in a wastewater treatment plant used in the secondary treatment process. The secondary clarifier allows for the settling and removal of biological floc or sludge produced in the aeration tank, further clarifying the treated wastewater before discharge or further treatment.						
	Sludge dryer [ENVO:03501473]	ENVO:03501473	A device designed to remove moisture from sludge through thermal drying methods, resulting in a dry, granular material that is easier to handle, store, or utilize in other applications.						
	Waste stabilization pond (lagoon) [ENVO:03600076]	ENVO:03600076	A human construction which confines wastewater in a depression enclosed by earthen structures.						

	Drainage ditch [ENVO:00000140]	ENVO:00000140	A ditch that collects water from the surrounding land.								
	Drainage channel [GENEPIO:0102058]	GENEPIO:0102058	A shallow, linear depression, often unlined or minimally engineered, designed to collect and direct surface water, to prevent flooding or erosion.								
	Drainage pipe [GENEPIO:0102059]	GENEPIO:0102059	A closed conduit used to transport water collected by drains or channels to a sewer, retention pond, or other drainage endpoint.								
	Toilet [ENVO:01000516]	ENVO:01000516	A fixture which is used primarily for the collection and, in some cases, disposal of human urine and feces.								
	Toilet bowl [ENVO:03501218]	ENVO:03501218	A plumbing fixture which is bowl-shaped, part of a toilet fixture, and capable of contain human waste until it is disposed of.								
	Sewer pipe [GENEPIO:0102064]	GENEPIO:0102064	A large underground conduit designed to collect and transport wastewater or stormwater to treatment facilities or outfalls.								
	Transportation vehicle [ENVO:01000604]	ENVO:01000604	A vehicle is a mobile machine which transports people or cargo.								
	Boat [ENVO:01000608]	ENVO:01000608	A boat is a watercraft of any size which is able to float or plane on water.								
	Airplane [ENVO:03501349]	ENVO:03501349	An aircraft which 1) has fixed wings and 2) is propelled by a thrust from a jet engine, propeller, or rocket engine.								
environmental material menu											
	Bar screen [ENVO:03501474]	ENVO:03501474	A mechanical filter used to remove large objects, such as rags and plastics, from wastewater								
	Surface water [ENVO:00002042]	ENVO:00002042	Water that is found on the surface of an astronomical object.								
	Wastewater [ENVO:00002001]	ENVO:00002001	Water that has been adversely affected in quality by anthropogenic influence								
	Wastewater sediment [ENVO:03501456]	ENVO:03501456	A sediment which is removed from waste water during a waste water treatment process.								
	Sludge [ENVO:00002044]	ENVO:00002044	The residual semi-solid material left from domestic or industrial processes, or wastewater treatment processes.								
	Primary sludge [ENVO:00002057]	ENVO:00002057	Sludge generated from the initial processes (i.e., precipitation, sedimentation) of wastewater treatment.								
	Secondary sludge [ENVO:00002058]	ENVO:00002058	Activated waste biomass generated during wastewater treatment.								
	Wastewater effluent [ENVO:03501457]	ENVO:03501457	A wastewater which has been discharged from any item of equipment at a stage of a wastewater treatment process.								
	Primary wastewater effluent [GENEPIO:0100892]	GENEPIO:0100892	A wastewater effluent which has been discharged from a primary clarifier after the first stage of sedimentation.								
	Secondary wastewater effluent [GENEPIO:0100893]	GENEPIO:0100893	A wastewater effluent which has been discharged from a secondary clarifier after the second stage of sedimentation.								
environmental material properties menu											
	Fluid (stagnant) [GENEPIO:0101004]	GENEPIO:0101004	A quality of a body of water wherein it has no current or flow.								
	Fluid (slow) [GENEPIO:0101005]	GENEPIO:0101005	A quality of a body of water wherein there is a slow flow.								
	Fluid (fast) [GENEPIO:0101006]	GENEPIO:0101006	A quality of a body of water wherein there is a fast flow.								
	Contamination [PATO:0015031]	PATO:0015031	The presence of a constituent, impurity, or some other undesirable element that spoils, corrupts, infects, makes unfit, or makes inferior a material, physical body, natural environment, place of human occupancy, or other material entity.								
	Fecal-contaminated [GENEPIO:0101010]	GENEPIO:0101010	A contamination quality in which fecal matter is a key component of the contamination.								
	Liquid [PATO:0001735]	PATO:0001735	A physical quality inhering in a bearer by virtue of the bearer's parts having the arrangement which exhibits characteristics of liquids.								
	Slurry-like [GENEPIO:0101007]	GENEPIO:0101007	An quality in which the fluid like material is more viscous due to the suspension of insoluble solid particles.								
	Semi-solid [NCIT:C149895]	NCIT:C149895	A state of matter consisting of molecules in a non-rigid structure that can retain its shape and volume but that is not resistant to such change.								
	Solid [PATO:0001736]	PATO:0001736	A quality in which an object or material exhibits characteristics of solids, lacking movement or flow.								
	Treated [GENEPIO:0101008]	GENEPIO:0101008	A quality which denotes an altered state of an item resulting from purposeful interventions or processes.								
	Untreated [GENEPIO:0101009]	GENEPIO:0101009	A quality which denotes an absence of purposeful intervention or processes on an item.								
wastewater system type menu											
	Combined sewer system [ENVO:03501453]	ENVO:03501453	A sewerred sanitation system that collects rainwater runoff, domestic sewage, and industrial wastewater.								
	Sanitary sewer system [ENVO:03501454]	ENVO:03501454	A sewerred sanitation system that collects only domestic sewage.								
	Waste stabilization pond [ENVO:03600076]	ENVO:03600076	A human construction which confines wastewater in a depression enclosed by earthen structures.								
	Latrine [ENVO:01000519]	ENVO:01000519	A latrine is a toilet which is of simple construction (relative to a flush or chemical toilet) and typically intended for communal use.								
	Septic tank [ENVO:03501451]	ENVO:03501451	An underground holding and treatment site for domestic wastewater.								
	Cesspit [ENVO:03501452]	ENVO:03501452	A pit for the disposal and storage of sewage.								
	Chemical toilet [ENVO:01000529]	ENVO:01000529	A chemical toilet fixture is a toilet fixture which uses chemicals to deodorise and treat excreta which is stored in the fixture.								
	Composting toilet [ENVO:01000550]	ENVO:01000550	A composting toilet fixture is a dry toilet fixture in which managed, aerobic decomposition converts human excreta into organic matter suitable for the fertilisation or amendment of soils.								
	Plumbing drain [ENVO:01000924]	ENVO:01000924	An artificial channel which transports unwanted water or waste liquids away from their source, either to a more useful area, a receptacle, or into sewers or stormwater mains as waste discharge to be released or processed.								
	Wastewater waste tank [GENEPIO:0102057]	GENEPIO:0102057	A storage tank designed to hold wastewater, without necessarily processing or treating it. This tank is typically used in systems where temporary containment of excretory waste is required before disposal or treatment.								

experimental specimen role type menu									
	Positive experimental control [GENEPIO:0101018]	GENEPIO:0101018	A control specimen that is expected to yield a positive result, to establish a reference baseline for an experiment.						
	Negative experimental control [GENEPIO:0101019]	GENEPIO:0101019	A control specimen that is expected to yield a negative result, to establish a reference baseline for an experiment.						
	Technical replicate [EFO:0002090]	EFO:0002090	A technical replicate is a replicate role where the same BioSample is use e.g. the same pool of RNA used to assess technical (as opposed to biological) variation within an experiment.						
	Biological replicate [EFO:0002091]	EFO:0002091	A biological replicate is a replicate role that consists of independent biological replicates made from different individual biosamples.						
collection device menu									
	Grab sampler [GENEPIO:0100941]	GENEPIO:0100941	A specimen collection device which is used to collect discrete, instantaneous samples of water, soil, or other substances from a specific point in a body of water or at a specific location.						
	Bag filtration device [GENEPIO:0102027]	GENEPIO:0102027							
	Core sampling device [GENEPIO:0100943]	GENEPIO:0100943	A grab sampler that captures a vertical section of the substrate matrix of fecal sludge.						
	Vacuum sludge sampling device [GENEPIO:0100944]	GENEPIO:0100944	A grab sampler that takes a sample at a designated depth with minimal disturbance to surrounding layers.						
	Cone-shaped sampling device [GENEPIO:0100945]	GENEPIO:0100945	A grab sample that has a controlled valve that opens to take a sample from a specific depth, then closes to bring the sample out.						
	Horizontal grab sampling device [GENEPIO:0100946]	GENEPIO:0100946	A grab sampler in which the container for the sample is mounted on the end of a rod, which is suitable for collecting discharge from a pipe or truck.						
	Vertical grab sampling device [GENEPIO:0100947]	GENEPIO:0100947	A grab sampler in which the container for the sample is mounted on the end of a rod, which is suitable for collecting waste from a tank.						
	Composite sampler [GENEPIO:0100942]	GENEPIO:0100942	A specimen collection device that collects material over different times or locations.						
	Passive (trap) sampler [GENEPIO:0100948]	GENEPIO:0100948	A composite sampler that passively collects a sample without use of electricity or a battery.						
	Moore swab [GENEPIO:0100949]	GENEPIO:0100949	A composite sampler which consists of gauze pad tied with string, suspended in flowing water or wastewater, in order to collect a wastewater sample.						
	Automatic composite sampler [GENEPIO:0100950]	GENEPIO:0100950	A composite sampler which is automated to collect and store multiple wastewater samples across multiple time points.						
	Automatic flow-proportional sampler [GENEPIO:0100951]	GENEPIO:0100951	A composite sampler which is automated to collect and store multiple wastewater samples in a manner proportional to flow.						
	Automatic sequential (time-proportional) sampler [GENEPIO:0100952]	GENEPIO:0100952	A composite sampler which is automated to collect and combine multiple samples of equal volume taken at a set time interval.						
collection method menu									
	Grab sampling [GENEPIO:0100953]	GENEPIO:0100953	An environmental material collection process in which a water or soil sample is taken at a single point of time using a container type known as a grab sampler.						
	Bag Mediated Filtration [GENEPIO:0102028]	GENEPIO:0102028							
	Composite sampling [GENEPIO:0100954]	GENEPIO:0100954	An environmental material collection process in which multiple water or soil samples are taken at different time points and combined to produce a composite. Samples can be collected continuously or at discrete time points.						
	Passive composite sampling [GENEPIO:0100955]	GENEPIO:0100955	A method of composite sampling in which a continuous sample is collected passively without electrical input minimizing cost.						
	Automatic composite sampling [GENEPIO:0100956]	GENEPIO:0100956	A method of composite sampling which utilizes an automated system to collect multiple samples, continuously or at discrete timepoints.						
	Manual composite sampling [GENEPIO:0100957]	GENEPIO:0100957	A method of composite sampling in which multiple grab samples from discrete time points are taken and then combined to produce a single composite sample.						
water catchment area human population range menu									
	<10 people		An estimation of population size for a group smaller than 10 people.						
	10 - 100 people		An estimation of population size for a group smaller than 100 people and larger than 10 people.						
	100 - 1,000 people		An estimation of population size for a group smaller than 1,000 people and larger than 100 people.						
	1,000 - 10,000 people		An estimation of population size for a group smaller than 10,000 people and larger than 1,000 people.						
	10,000 - 100,000 people		An estimation of population size for a group smaller than 100,000 people and larger than 10,000 people.						
	100,000 - 1,000,000 people		An estimation of population size for a group smaller than 1,000,000 people and larger than 100,000 people.						
	1,000,000+ people		An estimation of population size for a group larger than 1,000,000 people.						
water catchment area human population density unit menu									
	persons per square mile [GENEPIO:0100989]	GENEPIO:0100989	A unit of population density that describes the average number of people in a square mile of a given area.						
	persons per square kilometer [GENEPIO:0100990]	GENEPIO:0100990	A unit of population density that describes the average number of people in a square kilometer of a given area.						
	residents per square mile [GENEPIO:0100991]	GENEPIO:0100991	A unit of population density that describes the average number of registered residents in a square mile of a given area.						
	residents per square kilometer [GENEPIO:0100992]	GENEPIO:0100992	A unit of population density that describes the average number of registered residents in a square kilometer of a given area.						
populated area type menu									

	Suburban [GSSO:011077]	GSSO:011077	A mixed-use or residential area, existing either as part of a city/urban area, or as a separate residential community within commuting distance of one. Suburbs might have their own political or legal jurisdiction, especially in the United States, but this is not always the case, especially in the United Kingdom where most suburbs are located within the administrative boundaries of cities.								
	Rural [GSSO:011078]	GSSO:011078	A geographic area that is located outside towns and cities. Rural areas are primarily used for agriculture or pastoralism and may contain rural settlements.								
	Urban [GSSO:011080]	GSSO:011080	A human settlement with a high population density and infrastructure of built environment. Urban areas are created through urbanization and are categorized by urban morphology as cities, towns, conurbations or suburbs. In urbanism, the term contrasts to rural areas such as villages and hamlets; in urban sociology or urban anthropology it contrasts with natural environment.								
sampling weather conditions menu											
	Cloudy/Overcast [ENVO:03501418]	ENVO:03501418	Atmospheric weather in which the sky is mostly or completely obscured by clouds.								
	Partially cloudy [ENVO:03501419]	ENVO:03501419	Atmospheric weather in which the sky is partially obscured by clouds.								
	Drizzle [ENVO:03501420]	ENVO:03501420	An aggregate of water drops smaller than those of rain which falls on a planetary surface during a precipitation process.								
	Fog [ENVO:01000844]	ENVO:01000844	A visible mass of cloud water droplets or ice crystals suspended in the air at or near the surface of an astronomical body.								
	Rain [ENVO:01001564]	ENVO:01001564	An aggregate of raindrops falling to a planetary surface during a precipitation process.								
	Snow [ENVO:01000406]	ENVO:01000406	Snow is an environmental material which is primarily composed of flakes of crystalline water ice.								
	Storm [ENVO:01000876]	ENVO:01000876	A storm is an environmental process in which an environmental system and the processes it participates in are strongly perturbed by external forcings. These forcings typically increase the rates of processes unfolding in the system, relative to their normal rates.								
	Sunny/Clear [ENVO:03501421]	ENVO:03501421	Atmospheric weather in which the sun can be seen to shine brightly.								
presampling weather conditions menu											
	Cloudy/Overcast [ENVO:03501418]	ENVO:03501418	Atmospheric weather in which the sky is mostly or completely obscured by clouds.								
	Partially cloudy [ENVO:03501419]	ENVO:03501419	Atmospheric weather in which the sky is partially obscured by clouds.								
	Drizzle [ENVO:03501420]	ENVO:03501420	An aggregate of water drops smaller than those of rain which falls on a planetary surface during a precipitation process.								
	Fog [ENVO:01000844]	ENVO:01000844	A visible mass of cloud water droplets or ice crystals suspended in the air at or near the surface of an astronomical body.								
	Rain [ENVO:01001564]	ENVO:01001564	An aggregate of raindrops falling to a planetary surface during a precipitation process.								
	Snow [ENVO:01000406]	ENVO:01000406	Snow is an environmental material which is primarily composed of flakes of crystalline water ice.								
	Storm [ENVO:01000876]	ENVO:01000876	A storm is an environmental process in which an environmental system and the processes it participates in are strongly perturbed by external forcings. These forcings typically increase the rates of processes unfolding in the system, relative to their normal rates.								
	Sunny/Clear [ENVO:03501421]	ENVO:03501421	Atmospheric weather in which the sun can be seen to shine brightly.								
precipitation measurement unit menu											
	millimeter (mm) [UO:0000016]	UO:0000016	A length unit which is defined as one thousandth of a meter.								
	centimeter (cm) [UO:0000015]	UO:0000015	A length unit which is equal to one hundredth of a meter or 10^{-2} m								
	meter (m) [UO:0000008]	UO:0000008	An SI unit of length defined as the length of the path travelled by light in a vacuum in $1/299792458$ th of a second.								
	inch (in) [UO:0010011]	UO:0010011	A non-SI unit of length defined as one twelfth of a foot.								
	foot (ft) [UO:0010013]	UO:0010013	A non-SI unit of length which is approximately 0.3048 meters.								
air pressure measurement unit menu											
	atmosphere (atm) [EFO:0005212]	EFO:0005212	A non-SI unit of pressure defined as 101,325 pascals (Pa).								
	bar										
	pascal [UO:0000110]	UO:0000110	An SI unit of pressure defined as one newton per square meter (N/m ²).								
ambient temperature measurement unit menu											
	degree Fahrenheit (F) [UO:0000195]	UO:0000195	A unit of temperature on a scale where water freezes at 32 degrees and boils at 212 degrees under standard conditions.								
	degree Celsius (C) [UO:0000027]	UO:0000027	A unit of temperature on a scale where water freezes at 0 degrees and boils at 100 degrees under standard conditions.								
total daily flow rate measurement unit menu											
	cubic meter per second (m ³ /s)		A volumetric flow rate unit which is the measure of the volume of one cubic meter of matter crosses a given surface during the period of time equal to one second.								
	cubic meter per minute (m ³ /min)		A volumetric flow rate unit which is the measure of the volume of one cubic meter of matter crosses a given surface during the period of time equal to one minute.								
	cubic meter per hour (m ³ /h)		A volumetric flow rate unit which is the measure of the volume of one cubic meter of matter crosses a given surface during the period of time equal to one hour.								
	liter per second (L/s)		A volumetric flow rate unit which is the measure of the volume of one liter of matter crosses a given surface during the period of time equal to one second.								

	liter per minute (L/min)		A volumetric flow rate unit which is the measure of the volume of one liter of matter crosses a given surface during the period of time equal to one minute.							
	liter per hour (L/h)		A volumetric flow rate unit which is the measure of the volume of one liter of matter crosses a given surface during the period of time equal to one hour.							
	liter per day (L/day)		A volumetric flow rate unit which is the measure of the volume of one liter of matter crosses a given surface during the period of time equal to one day.							
	million gallons per day (MGD)		A volumetric flow rate unit which is the measure of the volume of one million gallons of matter crosses a given surface during the period of time equal to one day.							
instantaneous flow rate measurement unit menu										
	cubic meter per second (m³/s)		A volumetric flow rate unit which is the measure of the volume of one cubic meter of matter crosses a given surface during the period of time equal to one second.							
	cubic meter per minute (m³/min)		A volumetric flow rate unit which is the measure of the volume of one cubic meter of matter crosses a given surface during the period of time equal to one minute.							
	cubic meter per hour (m³/h)		A volumetric flow rate unit which is the measure of the volume of one cubic meter of matter crosses a given surface during the period of time equal to one hour.							
	liter per second (L/s)		A volumetric flow rate unit which is the measure of the volume of one liter of matter crosses a given surface during the period of time equal to one second.							
	liter per minute (L/min)		A volumetric flow rate unit which is the measure of the volume of one liter of matter crosses a given surface during the period of time equal to one minute.							
	liter per hour (L/h)		A volumetric flow rate unit which is the measure of the volume of one liter of matter crosses a given surface during the period of time equal to one hour.							
	liter per day (L/day)		A volumetric flow rate unit which is the measure of the volume of one liter of matter crosses a given surface during the period of time equal to one day.							
	million gallons per day (MGD)		A volumetric flow rate unit which is the measure of the volume of one million gallons of matter crosses a given surface during the period of time equal to one day.							
turbidity measurement unit menu										
	nephelometric turbidity unit (NTU)		A measure of turbidity calculated by using a nephelometer to compare how white light is scattered in a water sample.							
	formazin nephelometric unit (FNU) [UO:0000318]	UO:0000318	A measure of turbidity calculated by comparing how infrared light is scattered in a water sample against the amount of infrared light scattered in a reference solution containing formazin.							
dissolved oxygen measurement unit menu										
	milligram per liter (mg/L) [UO:0000273]	UO:0000273	A non-SI unit of density that is equivalent to the SI metric kilogram per cubic meter.							
	kilogram per cubic meter (kg/m³) [UO:0000083]	UO:0000083	An SI unit of density that is one thousandth of the density of water.							
	part per million (ppm) [UO:0000169]	UO:0000169	A unitless measure of density that represents one item out of a million.							
oxygen reduction potential (ORP) measurement unit menu										
	milliVolt (mV) [UO:0000247]	UO:0000247	A non-SI unit of electromotive force that is one thousandth of a volt.							
chemical oxygen demand (COD) measurement unit menu										
	milligram per liter (mg/L) [UO:0000273]	UO:0000273	A non-SI unit of density that is equivalent to the SI metric kilogram per cubic meter.							
carbonaceous biochemical oxygen demand (CBOD) measurement unit menu										
	milligram per liter (mg/L) [UO:0000273]	UO:0000273	A non-SI unit of density that is equivalent to the SI metric kilogram per cubic meter.							
total suspended solids (TSS) measurement unit menu										
	percent (%) [UO:0000187]	UO:0000187	A unitless measure that represents one in a hundred.							
	gram per liter (g/L) [UO:0000175]	UO:0000175	A non-SI unit of density that is a thousand kilograms per cubic meter.							
total dissolved solids (TDS) measurement unit menu										
	percent (%) [UO:0000187]	UO:0000187	A unitless measure that represents one in a hundred.							
	gram per liter (g/L) [UO:0000175]	UO:0000175	A non-SI unit of density that is a thousand kilograms per cubic meter.							
total solids (TS) measurement unit menu										
	percent (%) [UO:0000187]	UO:0000187	A unitless measure that represents one in a hundred.							
	gram per liter (g/L) [UO:0000175]	UO:0000175	A non-SI unit of density that is a thousand kilograms per cubic meter.							
alkalinity measurement unit menu										
	milliequivalent per liter (meq/L)		A unit of ion concentration that represents chemical activity per volume.							
	milligram per liter (mg/L) [UO:0000273]	UO:0000273	A non-SI unit of density that is equivalent to the SI metric kilogram per cubic meter.							
	parts per million [UO:0000169]	UO:0000169	A unitless measure of density that represents one item out of a million.							
conductivity measurement unit menu										
	milliSiemen per centimeter (mS/cm)		A non-SI unit of electrical conductivity that is equivalent to one tenth of a Siemen per meter (S/m).							
	microSiemen per centimeter (µS/cm)		A non-SI unit of electrical conductivity that is equivalent to one ten thousandth of a Siemen per meter (S/m).							

[illegible]

	Baseline surveillance (random sampling) [GENEPIO:0100005]	GENEPIO:0100005	A surveillance sampling strategy in which baseline is established at the beginning of a study or project by the selection of sample units via random sampling.							
	Targeted surveillance (non-random sampling) [GENEPIO:0100006]	GENEPIO:0100006	A surveillance sampling strategy in which an aspired outcome is explicitly stated.							
	Priority surveillance project [GENEPIO:0100007]	GENEPIO:0100007	A targeted surveillance strategy which is considered important and/or urgent.							
	Longitudinal surveillance (repeat sampling) [GENEPIO:0100009]	GENEPIO:0100009	A surveillance strategy in which an individual or site is selected to undergo repeat sampling over a defined period of time.							
	Travel-associated surveillance [GENEPIO:0100012]	GENEPIO:0100012	A surveillance strategy in which wastewater produced within travel hubs or travel vehicles are monitored.							
	Domestic travel surveillance [GENEPIO:0100013]	GENEPIO:0100013	A surveillance strategy in which wastewater produced within travel hubs or travel vehicles are monitored, related to domestic travel.							
	International travel surveillance [GENEPIO:0100014]	GENEPIO:0100014	A surveillance strategy in which wastewater produced within travel hubs or travel vehicles are monitored, related to international travel.							
	Research [GENEPIO:0100022]	GENEPIO:0100022	A sampling strategy in which sites are sampled in order to perform research.							
	Viral passage experiment [GENEPIO:0100023]	GENEPIO:0100023	A research sampling strategy in which samples are selected in order to perform a viral passage experiment.							
	Protocol testing experiment [GENEPIO:0100024]	GENEPIO:0100024	A research sampling strategy in which samples are collected in order to test a method or protocol.							
sequencing platform menu										
	Illumina [GENEPIO:0001923]	GENEPIO:0001923	A sequencing platform provided by the Illumina company.							
	Pacific Biosciences [GENEPIO:0001927]	GENEPIO:0001927	A sequencing platform provided by the Pacific Biosciences company.							
	Ion Torrent [GENEPIO:0002683]	GENEPIO:0002683	A sequencing platform provided by the Ion Torrent company.							
	Oxford Nanopore Technologies [GENEPIO:0100986]	GENEPIO:0100986	An sequencing platform that is developing and selling nanopore sequencing products and is based in the UK.							
	BGI Genomics [GENEPIO:0004324]	GENEPIO:0004324	A sequencing platform provided by the BGI Genomics company.							
	MGI [GENEPIO:0004325]	GENEPIO:0004325	A sequencing platform provided by the MGI company.							
	Roche LS454 [GENEPIO:0001926]	GENEPIO:0001926	A sequencing platform provided by the 454 Life Sciences company.							
	SOLID sequencing [GENEPIO:0002684]	GENEPIO:0002684	A sequencing platform provided by Life Technologies Corporation.							
	Complete Genomics [GENEPIO:0001924]	GENEPIO:0001924	An in-house sequencing platform provided by Complete Genomics.							
	Helicos [GENEPIO:0002682]	GENEPIO:0002682	A sequencing platform brand provided by Helicos corporation (now defunct).							
	Applied Biosystems [GENEPIO:0100985]	GENEPIO:0100985	A sequencing platform provided by ThermoFisher.							
sequencing instrument menu										
	Illumina [GENEPIO:0100105]	GENEPIO:0100105	A DNA sequencer manufactured by the Illumina corporation.							
	Illumina Genome Analyzer [GENEPIO:0100106]	GENEPIO:0100106	A DNA sequencer manufactured by Solexa as one of its first sequencer lines, launched in 2006, and capable of sequencing 1 gigabase (Gb) of data in a single run.							
	Illumina Genome Analyzer II [OBI:0000703]	OBI:0000703	A DNA sequencer manufactured by the Illumina (Solexa) corporation, which supports sequencing of single or paired end clone libraries relying on sequencing by synthesis technology.							
	Illumina Genome Analyzer Iix [OBI:0002000]	OBI:0002000	An Illumina Genome Analyzer II which is manufactured by the Illumina corporation. It supports sequencing of single, long or short insert paired end clone libraries relying on sequencing by synthesis technology. The Genome Analyzer Iix is the most widely adopted next-generation sequencing platform and proven and published across the broadest range of research applications.							
	Illumina HiScanSQ [GENEPIO:0100109]	GENEPIO:0100109	A DNA sequencer manufactured by the Illumina corporation using sequence-by-synthesis chemistry, and contains a HiScan Reader for sequencing and microarray-based analyses as well as an "SQ Module" to support microfluidics.							
	Illumina HiSeq [GENEPIO:0100110]	GENEPIO:0100110	A DNA sequencer manufactured by the Illumina corporation using sequence-by-synthesis chemistry, enabling deep sequencing and high yield.							
	Illumina HiSeq X [GENEPIO:0100111]	GENEPIO:0100111	A DNA sequencer manufactured by the Illumina corporation using sequence-by-synthesis chemistry that enables sufficient depth and coverage to produce the first 30x human genome for \$1000.							
	Illumina HiSeq X Five [GENEPIO:0100112]	GENEPIO:0100112	A DNA sequencer manufactured by the Illumina corporation using sequence-by-synthesis chemistry that consists of a set of 5 HiSeq X Sequencing Systems.							
	Illumina HiSeq X Ten [GENEPIO:0100113]	GENEPIO:0100113	A DNA sequencer that consists of a set of 10 HiSeq X Sequencing Systems.							
	Illumina HiSeq 1000 [OBI:0002022]	OBI:0002022	A DNA sequencer which is manufactured by the Illumina corporation, with a single flow cell and a throughput of up to 35 Gb per day. It supports sequencing of single, long or short insert paired end clone libraries relying on sequencing by synthesis technology.							
	Illumina HiSeq 1500 [GENEPIO:0100115]	GENEPIO:0100115	A DNA sequencer which is manufactured by the Illumina corporation, with a single flow cell and a throughput of up to 35-50 Gb per day.							
	Illumina HiSeq 2000 [OBI:0002001]	OBI:0002001	A DNA sequencer which is manufactured by the Illumina corporation, with two flow cells and a throughput of up to 55 Gb per day. Built upon sequencing by synthesis technology, the machine is optimized for generation of data for multiple samples in a single run.							

	Illumina HiSeq 2500 [OBID:0002002]	OBID:0002002	A DNA sequencer which is manufactured by the Illumina corporation, with two flow cells and a throughput of up to 160 Gb per day. Built upon sequencing by synthesis technology, the machine is optimized for generation of data for batching multiple samples or rapid results on a few samples.							
	Illumina HiSeq 3000 [OBID:0002048]	OBID:0002048	A DNA sequencer manufactured by Illumina corporation, with a single flow cell and a throughput of more than 200 Gb per day.							
	Illumina HiSeq 4000 [OBID:0002049]	OBID:0002049	A DNA sequencer manufactured by Illumina corporation, with two flow cell and a throughput of more than 400 Gb per day.							
	Illumina iSeq [GENEPIO:0100120]	GENEPIO:0100120	A DNA sequencer manufactured by the Illumina corporation using sequence-by-synthesis chemistry that is lightweight.							
	Illumina iSeq 100 [GENEPIO:0100121]	GENEPIO:0100121	A DNA sequencer manufactured by the Illumina corporation using sequence-by-synthesis chemistry that is lightweight and has an output capacity between 144MB-1.2GB.							
	Illumina NovaSeq [GENEPIO:0100122]	GENEPIO:0100122	A DNA sequencer manufactured by the Illumina corporation using sequence-by-synthesis chemistry that has an output capacity of 6 Tb and 20 billion reads in dual flow cell mode.							
	Illumina NovaSeq 6000 [GENEPIO:0100123]	GENEPIO:0100123	A DNA sequencer which is manufactured by the Illumina corporation, with two flow cells and an output of up to 6000 Gb (32-40 B reads per run). The sequencer utilizes synthesis technology and patterned flow cells to optimize throughput and even spacing of sequencing clusters.							
	Illumina MiniSeq [GENEPIO:0100124]	GENEPIO:0100124	A DNA sequencer which is manufactured by the Illumina corporation using sequence-by-synthesis chemistry that fits on a benchtop and has an output capacity of 1.65-7.5 Gb.							
	Illumina MiSeq [OBID:0002003]	OBID:0002003	A DNA sequencer which is manufactured by the Illumina corporation. Built upon sequencing by synthesis technology, the machine provides an end-to-end solution (cluster generation, amplification, sequencing, and data analysis) in a single machine.							
	Illumina NextSeq [GENEPIO:0100126]	GENEPIO:0100126	A DNA sequencer which is manufactured by the Illumina corporation using sequence-by-synthesis chemistry that fits on a benchtop and has an output capacity of 1.65-7.5 Gb.							
	Illumina NextSeq 500 [OBID:0002021]	OBID:0002021	A DNA sequencer which is a desktop sequencer ideal for smaller-scale studies manufactured by the Illumina corporation. It supports sequencing of single, long or short insert paired end clone libraries relying on sequencing by synthesis technology.							
	Illumina NextSeq 550 [GENEPIO:0100128]	GENEPIO:0100128	A DNA sequencer which is a desktop sequencer ideal for smaller-scale studies manufactured by the Illumina corporation. It supports sequencing of single, long or short insert paired end clone libraries relying on sequencing by synthesis technology. The 550 is an upgrade on the 500 model.							
	Illumina NextSeq 1000 [GENEPIO:0004432]	GENEPIO:0004432	A DNA sequencer which is manufactured by the Illumina corporation using sequence-by-synthesis chemistry that fits on a benchtop and uses P1 and P2 flow cells.							
	Illumina NextSeq 2000 [GENEPIO:0100129]	GENEPIO:0100129	A DNA sequencer which is manufactured by the Illumina corporation using sequence-by-synthesis chemistry that fits on a benchtop and has an output capacity of 30-360 Gb.							
	PacBio [GENEPIO:0100130]	GENEPIO:0100130	A DNA sequencer manufactured by the Pacific Biosciences corporation.							
	PacBio RS [GENEPIO:0100131]	GENEPIO:0100131	A DNA sequencer manufactured by the Pacific Biosciences corporation which utilizes "SMRT Cells" for single-molecule real-time sequencing. The RS was the first model made by the company.							
	PacBio RS II [OBID:0002012]	OBID:0002012	A DNA sequencer which is manufactured by the Pacific Biosciences corporation. Built upon single molecule real-time sequencing technology, the machine is optimized for generation with long reads and high consensus accuracy.							
	PacBio Sequel [GENEPIO:0100133]	GENEPIO:0100133	A DNA sequencer built upon single molecule real-time sequencing technology, optimized for generation with long reads and high consensus accuracy, and manufactured by the Pacific Biosciences corporation							
	PacBio Sequel II [GENEPIO:0100134]	GENEPIO:0100134	A DNA sequencer built upon single molecule real-time sequencing technology, optimized for generation of highly accurate ("HiFi") long reads, and which is manufactured by the Pacific Biosciences corporation.							
	Ion Torrent [GENEPIO:0100135]	GENEPIO:0100135	A DNA sequencer manufactured by the Ion Torrent corporation.							
	Ion Torrent PGM [GENEPIO:0100136]	GENEPIO:0100136	A DNA sequencer manufactured by the Ion Torrent corporation which utilizes ion semiconductor sequencing and has an output capacity of 300 MB - 1GB.							
	Ion Torrent Proton [GENEPIO:0100137]	GENEPIO:0100137	A DNA sequencer manufactured by the Ion Torrent corporation which utilizes ion semiconductor sequencing and has an output capacity of up to 15 Gb.							
	Ion Torrent S5 XL [GENEPIO:0100138]	GENEPIO:0100138	A DNA sequencer manufactured by the Ion Torrent corporation which utilizes ion semiconductor sequencing and requires only a small amount of input material while producing data faster than the S5 model.							
	Ion Torrent S5 [GENEPIO:0100139]	GENEPIO:0100139	A DNA sequencer manufactured by the Ion Torrent corporation which utilizes ion semiconductor sequencing and requires only a small amount of input material.							
	Oxford Nanopore [GENEPIO:0100140]	GENEPIO:0100140	A DNA sequencer manufactured by the Oxford Nanopore corporation.							
	Oxford Nanopore Flongle [GENEPIO:0004433]	GENEPIO:0004433	An adapter for MinION or GridION DNA sequencers manufactured by the Oxford Nanopore corporation that enables sequencing on smaller, single-use flow cells.							
	Oxford Nanopore GridION [GENEPIO:0100141]	GENEPIO:0100141	A DNA sequencer that is manufactured by the Oxford Nanopore Technologies corporation, that can run and analyze up to five individual flow cells producing up to 150 Gb of data per run. The sequencer produces real-time results and utilizes nanopore technology with the option of running the flow cells concurrently or individual							
	Oxford Nanopore MinION [GENEPIO:0100142]	GENEPIO:0100142	A portable DNA sequencer which is manufactured by the Oxford Nanopore Technologies corporation, that uses consumable flow cells producing up to 30 Gb of DNA sequence data per flow cell. The sequencer produces real-time results and utilizes nanopore technology with up to 512 nanopore channels in the sensor array.							

	Oxford Nanopore PromethION [GENEPIO:0100143]	GENEPIO:0100143	A DNA sequencer that is manufactured by the Oxford Nanopore Technologies corporation, capable of running up to 48 flow cells and producing up to 7.6 Tb of data per run. The sequencer produces real-time results and utilizes Nanopore technology, with each flow cell allowing up to 3,000 nanopores to be sequencing simultaneously.							
	BGI Genomics sequencing instrument [GENEPIO:0100144]	GENEPIO:0100144	A DNA sequencer manufactured by the BGI Genomics corporation.							
	BGISEQ-500 [GENEPIO:0100145]	GENEPIO:0100145	A DNA sequencer manufactured by the BGI Genomics corporation that utilizes Probe-Anchored Synthesis (cPAS) chemistry and "DNA Nanoballs".							
	MGI sequencing instrument [GENEPIO:0100146]	GENEPIO:0100146	A DNA sequencer manufactured by the MGI corporation.							
	MGISEQ-2000RS [GENEPIO:0100971]	GENEPIO:0100971	An MGI sequencing instrument model that utilises DNA nanoball and (DNB) and probe-anchor synthesis (cPAS) for next generation sequencing ad which is capable of medium to high throughput sequencing.							
	MGI DNBSEQ-G99 [GENEPIO:0100972]	GENEPIO:0100972	An MGI sequencing instrument model that utilises DNA nanoball and (DNB) and probe-anchor synthesis (cPAS) for next generation sequencing and which adopts triangular matrix signal spots on sequencing flow cell, for low throughput at highs speeds.							
	MGI DNBSEQ-G400 [GENEPIO:0100148]	GENEPIO:0100148	A DNA sequencer manufactured by the MGI corporation with an output capacity of 55Gb; 1440GB per run.							
	MGI DNBSEQ-G400RS FAST [GENEPIO:0100149]	GENEPIO:0100149	A DNA sequencer manufactured by the MGI corporation with an output capacity of 55Gb; 330GB per run, which enables faster sequencing than the DNBSEQ-G400.							
	MGI DNBSEQ-T7 [GENEPIO:0100147]	GENEPIO:0100147	A high throughput DNA sequencer manufactured by the MGI corporation with an output capacity of 1; 6TB of data per day.							
	MGI DNBSEQ-E25 [GENEPIO:0100973]	GENEPIO:0100973	An MGI sequencing instrument model that is a compact and lightweight standalone system which can bu used inside or outside the lab.							
	MGI DNBSEQ-G50 [GENEPIO:0100150]	GENEPIO:0100150	A DNA sequencer manufactured by the MGI corporation with an output capacity of 10 – 150 GB per run and enables different read lengths.							
	454 Genome Sequencer [GENEPIO:0001937]	GENEPIO:0001937	A DNA sequencer first manufactured by 454 Life Science Corporation that conducts pyrosequencing.							
	454 Genome Sequencer 20 [OBI:0000689]	OBI:0000689	A DNA sequencer first manufactured by 454 Life Science Corporation in 2005, and enables pyrosequencing to be performed. It comprises both optics and fluidics subsystems, which are controlled by a computer subsystem.							
	454 Genome Sequencer FLX [OBI:0000702]	OBI:0000702	A DNA sequencer which was first manufactured by 454 Life Science Corporation in 2008 and enables pyrosequencing to be performed. It comprises both optics and fluidics subsystems, which are controlled by a computer subsystem. It has the ability to sequence 400-600 million base pairs per run with 400-500 base pair read lengths.							
	454 Genome Sequencer FLX+ [GENEPIO:0100982]	GENEPIO:0100982	A 454 Genome Sequencer that performs pyrosequencing and comprises both optics and fluidics subsystems and can be used for longer reads when used with the long-read Sequencing Kit XL+.							
	454 Genome Sequencer FLX Titanium [GENEPIO:0001936]	GENEPIO:0001936	A 454 Genome Sequencer that performs pyrosequencing and has enhanced capacity and generates longer reads.							
	454 Genome Sequencer Junior [GENEPIO:0001938]	GENEPIO:0001938	A 454 Genome Sequencer that performs pyrosequencing and is more compact.							
	SOLID System [OBI:0000696]	OBI:0000696	A DNA sequencer which is manufactured by Applied Biosystems and which enable DNA sequencing by ligation.							
	SOLID 5500 [GENEPIO:0001929]	GENEPIO:0001929	A DNA sequencer which is manufactured by Applied Biosystems and utilizes sequencing by ligation technology and faster run times than the SOLID 4 series.							
	SOLID 5500xl Genetic Analyzer [GENEPIO:0001930]	GENEPIO:0001930	A DNA sequencer which is manufactured by Applied Biosystems and has two FlowChips for across 12 lanes and with a higher throughput than the 5500 model.							
	SOLID 5500x-WI Genetic Analyzer [GENEPIO:0100984]	GENEPIO:0100984	A DNA sequencer which is manufactured by the Applied Biosystems corporation. Built upon SOLID sequencing technology and with a higher throughput than SOLID 5500xl Genetic Analyzer.							
	SOLID 3 Plus System [OBI:0002007]	OBI:0002007	A DNA sequencer which is manufactured by the Applied Biosystems corporation. Built upon SOLID sequencing technology, the machine generates greater than 1 billion mappable reads per run.							
	SOLID 4 System [OBI:0002024]	OBI:0002024	A DNA sequencer which is manufactured by the Applied Biosystems corporation. Built upon SOLID sequencing technology with 100 Gb mappable throughput.							
	SOLID 4hq System [GENEPIO:0001928]	GENEPIO:0001928	A DNA sequencer which is manufactured by the Applied Biosystems corporation. Built upon SOLID sequencing technology with 300 Gb mappable throughput.							
	SOLID PI System [GENEPIO:0001931]	GENEPIO:0001931	A DNA sequencer which is manufactured by the Applied Biosystems corporation. Built upon SOLID sequencing technology, the machine offers 50Gb mappable throughput.							
	SOLID System 2.0 [GENEPIO:0001932]	GENEPIO:0001932	A DNA sequencer which is manufactured by the Applied Biosystems corporation.							
	SOLID System 3.0 [GENEPIO:0001933]	GENEPIO:0001933	A DNA sequencer which is manufactured by the Applied Biosystems corporation.							
	HeliScope Single Molecule Sequencer [OBI:0000717]	OBI:0000717	A DNA sequencer manufacturer by Helicos Corporation to carry out Single Molecule sequencing using reversible termination chemistry.							
	Applied Biosystems sequencing instrument model [GENEPIO:0100974]	GENEPIO:0100974	A sequencing instrument model that is manufactured by Applied Biosystems and which performs Sanger sequencing and fragment analysis by capillary electrophoresis.							
	AB 310 Genetic Analyzer [GENEPIO:0100975]	GENEPIO:0100975	An Applied Biosystems sequencing instrument model which utilises a single capillary electrophoresis system to perform Sanger sequencing and fragment analysis that is automated.							
	AB 3130 Genetic Analyzer [GENEPIO:0100976]	GENEPIO:0100976	An Applied Biosystems sequencing instrument model which performs capillary electrophoresis to sequence DNA and has 4 capillaries.							
	AB 3130xL Genetic Analyzer [GENEPIO:0100977]	GENEPIO:0100977	An Applied Biosystems sequencing instrument model which performs capillary electrophoresis to sequence DNA and has 16 capillaries.							

	AB 3500 Genetic Analyzer [GENEPIO:0100978]	GENEPIO:0100978	An Applied Biosystems sequencing instrument model which performs capillary electrophoresis to sequence DNA and has 8 capillaries, which can run 96 well plates.								
	AB 3500xL Genetic Analyzer [GENEPIO:0100979]	GENEPIO:0100979	An Applied Biosystems sequencing instrument model which performs capillary electrophoresis to sequence DNA and has 24 capillaries, which can run 384 well plates.								
	AB 3730 Genetic Analyzer [GENEPIO:0100980]	GENEPIO:0100980	An Applied Biosystems sequencing instrument model which utilises an 48 capillary array electrophoresis system for sequencing.								
	AB 3730xL Genetic Analyzer [GENEPIO:0100981]	GENEPIO:0100981	An Applied Biosystems sequencing instrument model which utilises an 96 capillary array electrophoresis system for sequencing.								
sequencing assay type menu											
	Amplicon sequencing assay [OBI:0002767]	OBI:0002767	A sequencing assay in which a DNA or RNA input molecule is amplified by PCR and the product sequenced.								
	16S ribosomal gene sequencing assay [OBI:0002763]	OBI:0002763	An amplicon sequencing assay in which the amplicon is derived from universal primers used to amplify the 16S ribosomal RNA gene from isolate bacterial genomic DNA or metagenomic DNA from a microbial community. Resulting sequences are compared to reference 16S sequence databases to identify or classify bacteria present within a given sample.								
	Whole genome sequencing assay [OBI:0002117]	OBI:0002117	A DNA sequencing assay that intends to provide information about the sequence of an entire genome of an organism.								
	Whole metagenome sequencing assay [OBI:0002623]	OBI:0002623	A DNA sequencing assay that intends to provide information on the DNA sequences of multiple genomes (a metagenome) from different organisms present in the same input sample.								
	Whole virome sequencing assay [OBI:0002768]	OBI:0002768	A whole metagenome sequencing assay that intends to provide information on multiple genome sequences from different viruses present in the same input sample.								
amplicon pcr primer scheme menu											
	artic-v1 [GENEPIO:0100847]	GENEPIO:0100847	An amplicon strategy which was developed by the ARTIC consortium for SARS-CoV-2 with the attributes of version 1.0.0.								
	artic-v2 [GENEPIO:0100848]	GENEPIO:0100848	An amplicon strategy which was developed by the ARTIC consortium for SARS-CoV-2 with the attributes of version 2.0.0.								
	artic-v3 [GENEPIO:0100849]	GENEPIO:0100849	An amplicon strategy which was developed by the ARTIC consortium for SARS-CoV-2 with the attributes of version 3.0.0.								
	artic-v4 [GENEPIO:0100850]	GENEPIO:0100850	An amplicon strategy which was developed by the ARTIC consortium for SARS-CoV-2 with the attributes of version 4.0.0.								
	artic-v4.1 [GENEPIO:0100851]	GENEPIO:0100851	An amplicon strategy which was developed by the ARTIC consortium for SARS-CoV-2 with the attributes of version 4.1.0.								
	artic-v5.0.0_400 [GENEPIO:0100852]	GENEPIO:0100852	An amplicon strategy which was developed by the ARTIC consortium for SARS-CoV-2 with the attributes of version 5.0.0 which produces amplicons approximately 400bp in length.								
	artic-v5.1.0_400 [GENEPIO:0100853]	GENEPIO:0100853	An amplicon strategy which was developed by the ARTIC consortium for SARS-CoV-2 with the attributes of version 5.1.0 which produces amplicons approximately 400bp in length.								
	artic-v5.2.0_1200 [GENEPIO:0100854]	GENEPIO:0100854	An amplicon strategy which was developed by the ARTIC consortium for SARS-CoV-2 with the attributes of version 5.2.0 which produces amplicons approximately 1200bp in length.								
	artic-v5.2.0_400 [GENEPIO:0100855]	GENEPIO:0100855	An amplicon strategy which was developed by the ARTIC consortium for SARS-CoV-2 with the attributes of version 5.2.0 which produces amplicons approximately 400bp in length.								
	artic-v5.3.2_400 [GENEPIO:0100856]	GENEPIO:0100856	An amplicon strategy which was developed by the ARTIC consortium for SARS-CoV-2 with the attributes of version 5.3.2 which produces amplicons approximately 400bp in length.								
	eden-v1 [GENEPIO:0100857]	GENEPIO:0100857	An amplicon strategy which was developed by John-Sebastian Eden with primers for SARS-CoV-2 and attributes of version 1.0.0 which produces amplicons approximately 2500bp in length.								
	midnight-bccdc-v1 [GENEPIO:0100858]	GENEPIO:0100858	An amplicon strategy which is for SARS-CoV-2 and based on the original Midnight scheme developed by Oxford Nanopore Technologies, and adapted by the BCCDC Public Health Lab with the attributes of version 1.0.0 which produces amplicons approximately 1200bp in length.								
	midnight-bccdc-v2 [GENEPIO:0100859]	GENEPIO:0100859	An amplicon strategy which targets SARS-CoV-2 and is based on the original Midnight scheme developed by Oxford Nanopore Technologies, and adapted by the BCCDC Public Health Lab with the attributes of version 2.0.0 which produces amplicons approximately 1200bp in length.								
	midnight-bccdc-v3 [GENEPIO:0100860]	GENEPIO:0100860	An amplicon strategy which targets SARS-CoV-2 and is based on the original Midnight scheme developed by Oxford Nanopore Technologies, and adapted by the BCCDC Public Health Lab with the attributes of version 3.0.0 which produces amplicons approximately 1200bp in length.								
	midnight-bccdc-v4 [GENEPIO:0100861]	GENEPIO:0100861	An amplicon strategy which targets SARS-CoV-2 and is based on the original Midnight scheme developed by Oxford Nanopore Technologies, and adapted by the BCCDC Public Health Lab with the attributes of version 4.0.0 which produces amplicons approximately 1200bp in length.								
	midnight-ont-v3 [GENEPIO:0100862]	GENEPIO:0100862	An amplicon strategy which targets SARS-CoV-2 and was developed by Oxford Nanopore Technologies with the attributes of version 2.0.0 which produces amplicons approximately 1200bp in length.								
	midnight-v1 [GENEPIO:0100863]	GENEPIO:0100863	An amplicon strategy which targets SARS-CoV-2 and was developed by Oxford Nanopore Technologies with the attributes of version 1.0.0 which produces amplicons approximately 1200bp in length.								
	midnight-v2 [GENEPIO:0100864]	GENEPIO:0100864	An amplicon strategy which targets SARS-CoV-2 and was developed by Oxford Nanopore Technologies with the attributes of version 2.0.0 which produces amplicons approximately 1200bp in length.								
	varskip-vs1a [GENEPIO:0100865]	GENEPIO:0100865	An amplicon strategy which targets SARS-CoV-2 and was developed by New England BioLabs using PrimalSeq to reduce effects of variants with the attributes of version 1a long.								

	varskip-vss1a [GENEPIO:0100866]	GENEPIO:0100866	An amplicon strategy which targets SARS-CoV-2 and was developed by New England Biolabs using PrimalSeq to reduce effects of variants with the attributes of version 1a short.							
	varskip-vss2a [GENEPIO:0100867]	GENEPIO:0100867	An amplicon strategy which targets SARS-CoV-2 and was developed by New England Biolabs using PrimalSeq to reduce effects of variants with the attributes of version 2a.							
	varskip-vss2b [GENEPIO:0100868]	GENEPIO:0100868	An amplicon strategy which targets SARS-CoV-2 and was developed by New England Biolabs using PrimalSeq to reduce effects of variants with the attributes of version 2b.							
genomic target enrichment method menu										
	Hybridization capture [GENEPIO:0001950]	GENEPIO:0001950	Selection by hybridization in array or solution.							
	rRNA depletion method [GENEPIO:0101020]	GENEPIO:0101020	Removal of background RNA for the purposes of enriching the genomic target.							
quality control determination menu										
	No quality control issues identified [GENEPIO:0100562]	GENEPIO:0100562	A statement confirming that quality control processes were carried out and no quality issues were detected.							
	Sequence passed quality control [GENEPIO:0100563]	GENEPIO:0100563	A statement confirming that quality control processes were carried out and that the sequence met the assessment criteria.							
	Sequence failed quality control [GENEPIO:0100564]	GENEPIO:0100564	A statement confirming that quality control processes were carried out and that the sequence did not meet the assessment criteria.							
	Minor quality control issues identified [GENEPIO:0100565]	GENEPIO:0100565	A statement confirming that quality control processes were carried out and that the sequence did not meet the assessment criteria, however the issues detected were minor.							
	Sequence flagged for potential quality control issues [GENEPIO:0100566]	GENEPIO:0100566	A statement confirming that quality control processes were carried out however it is unclear whether the sequence meets the assessment criteria and the assessment requires review.							
	Quality control not performed [GENEPIO:0100567]	GENEPIO:0100567	A statement confirming that quality control processes have not been carried out.							
quality control issues menu										
	Low quality sequence [GENEPIO:0100568]	GENEPIO:0100568	Sequence data that does not meet quality control thresholds.							
	Sequence contaminated [GENEPIO:0100569]	GENEPIO:0100569	Sequence data that contains reads from unintended targets (e.g. other organisms, other samples) due to contamination so that it does not faithfully represent the genetic information from the biological source.							
	Low average genome coverage [GENEPIO:0100570]	GENEPIO:0100570	Sequence data in which the entire length of the genome is not sufficiently sequenced (low breadth of coverage), or particular positions of the genome are not sequenced a prescribed number of times (low depth of coverage).							
	Low percent genome captured [GENEPIO:0100571]	GENEPIO:0100571	Sequence data in which the entire length of the genome is not sufficiently sequenced (low breadth of coverage).							
	Read lengths shorter than expected [GENEPIO:0100572]	GENEPIO:0100572	Average sequence read lengths that are below the expected size range given a particular sequencing instrument, reagents and conditions.							
	Sequence amplification artifacts [GENEPIO:0100573]	GENEPIO:0100573	Sequence data containing errors generated during the PCR amplification process during library generation (e.g. mutations, altered read distribution, amplicon dropouts).							
	Low signal to noise ratio [GENEPIO:0100574]	GENEPIO:0100574	Sequence data containing more errors or undetermined bases (noise) than sequence representing the biological source (signal).							
	Low coverage of characteristic mutations [GENEPIO:0100575]	GENEPIO:0100575	Sequence data that contains a lower than expected number of mutations that are usually observed in the reference sequence.							
gene symbol menu										
	E gene (orf4) [GENEPIO:0100151]	GENEPIO:0100151								
	M gene (orf5) [GENEPIO:0100152]	GENEPIO:0100152								
	N gene (orf9) [GENEPIO:0100153]	GENEPIO:0100153								
	Spike gene (orf2) [GENEPIO:0100154]	GENEPIO:0100154								
	orf1ab (rep) [GENEPIO:0100155]	GENEPIO:0100155								
	orf1a (pp1a) [GENEPIO:0100156]	GENEPIO:0100156								
	nsp11 [GENEPIO:0100157]	GENEPIO:0100157								
	nsp1 [GENEPIO:0100158]	GENEPIO:0100158								
	nsp2 [GENEPIO:0100159]	GENEPIO:0100159								
	nsp3 [GENEPIO:0100160]	GENEPIO:0100160								
	nsp4 [GENEPIO:0100161]	GENEPIO:0100161								
	nsp5 [GENEPIO:0100162]	GENEPIO:0100162								
	nsp6 [GENEPIO:0100163]	GENEPIO:0100163								
	nsp7 [GENEPIO:0100164]	GENEPIO:0100164								
	nsp8 [GENEPIO:0100165]	GENEPIO:0100165								
	nsp9 [GENEPIO:0100166]	GENEPIO:0100166								

	nsp10 [GENEPIO:0100167]	GENEPIO:0100167								
	RdRp gene (nsp12) [GENEPIO:0100168]	GENEPIO:0100168								
	hel gene (nsp13) [GENEPIO:0100169]	GENEPIO:0100169								
	exoN gene (nsp14) [GENEPIO:0100170]	GENEPIO:0100170								
	nsp15 [GENEPIO:0100171]	GENEPIO:0100171								
	nsp16 [GENEPIO:0100172]	GENEPIO:0100172								
	orf3a [GENEPIO:0100173]	GENEPIO:0100173								
	orf3b [GENEPIO:0100174]	GENEPIO:0100174								
	orf6 (ns6) [GENEPIO:0100175]	GENEPIO:0100175								
	orf7a [GENEPIO:0100176]	GENEPIO:0100176								
	orf7b (ns7b) [GENEPIO:0100177]	GENEPIO:0100177								
	orf8 (ns8) [GENEPIO:0100178]	GENEPIO:0100178								
	orf9b [GENEPIO:0100179]	GENEPIO:0100179								
	orf9c [GENEPIO:0100180]	GENEPIO:0100180								
	orf10 [GENEPIO:0100181]	GENEPIO:0100181								
	orf14 [GENEPIO:0100182]	GENEPIO:0100182								
	SARS-COV-2 5' UTR [GENEPIO:0100183]	GENEPIO:0100183								
diagnostic target presence menu										
	diagnostic target present [GENEPIO:0100987]	GENEPIO:0100987	A quality inhering in a bearer by virtue of the bearer's existence.							
	diagnostic target absent [GENEPIO:0100988]	GENEPIO:0100988	Aquality denoting the lack of an entity.							
diagnostic measurement unit menu										
	gene copies per liter (GC/L)		A unit that measures the number of copies of a given gene within a liter of a biological material.							
	cycle threshold (Ct) [GENEPIO:0100657]	GENEPIO:0100657	A data field which describes the cycle threshold (Ct) value result from a diagnostic reverse transcription polymerase chain reaction (RT-PCR) test.							
	colony forming units per milliliter (CFU/mL) [UO:0000213]	UO:0000213	A unit of microbial density that describes the number of colony forming units within a milliliter of material.							
	colony forming units per 100 milliliter (CFU/100 mL)		A unit of microbial density that describes the number of colony forming units within 100 milliliters of material.							
	colony forming units per grams total solids (CFU/gTS)		A unit of microbial density that describes the number of colony forming units within a gram of total solids in waste material.							
	most probable number per milliliter (MPN/mL)		A unit of microbial density that describes the most probable number of microbes within one milliliter of material.							
	most probable number per 100 milliiter (MPN/100 mL)		A unit of microbial density that describes the most probable number of microbes within 100 milliliters of material.							
diagnostic measurement method menu										
	Quantitative real time polymerase chain reaction (qPCR) [OBI:0000893]	OBI:0000893	An assay, based on the PCR, that amplifies and simultaneously quantifies a specific DNA molecule based on the use of complementary probes/primers. It enables both detection and quantification (as absolute number of copies or relative amount when normalized to DNA input or additional normalizing genes) of one or more specific sequences in a DNA sample.							
	Digital real time polymerase chain reaction (dPCR)		A type of polymerase chain reaction technique in which the sample is fractionated, within which individual PCR reactions occur in each fraction							
	Bacteria culture test		An assay to identify the presence of bacteria							

Wastewater Harmonization Template - Version Tracking / Release Notes

Release Date	Update Date	Template Version(x.y.z)	DH Template Ver	Reference Guide Update	SOP Metadata Update	SOP DH Update
2024/02/08		1.0.0		1.0	1.0	1.0
2024/10/07		3.1.1		3.1	3.1	3.1
2025/01/31		4.2.2		4.2	4.2	4.2

NTR SOP Update	x changes (field)	y changes (values/IDs)	z changes (defs/formats/examples)
1.0			
1.0	New fields: proximal e	Additional picklists for environmental site, pre	New definitions for environmental site, presan
1.0	New fields: experimental protocol url,	amplicon pcr primer scheme URL, AMR analysis date,	lineage/clade analysis

Sampling activity

date, target taxonomic name 1, target taxonomic name 2, target taxonomic name 3