OSM Data Usage in Esri's ArcGIS Online Basemaps

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Overview

Esri is expanding coverage and content in its publically available basemap services hosted on ArcGIS Online. To expand coverage at large scales globally, Esri is embracing the OpenStreetMap (OSM) community to supplement content and produce cartographic products in the ArcGIS Online Basemap cartographic styles. An important aspect of being part of the OSM community is abiding by its licensing and use guidelines when working with OSM data. Esri took great care to ensure the process of obtaining and processing the OSM data is a "Trivial Transformation" for "Produced Works" served by Esri through the ArcGIS Online Platform.
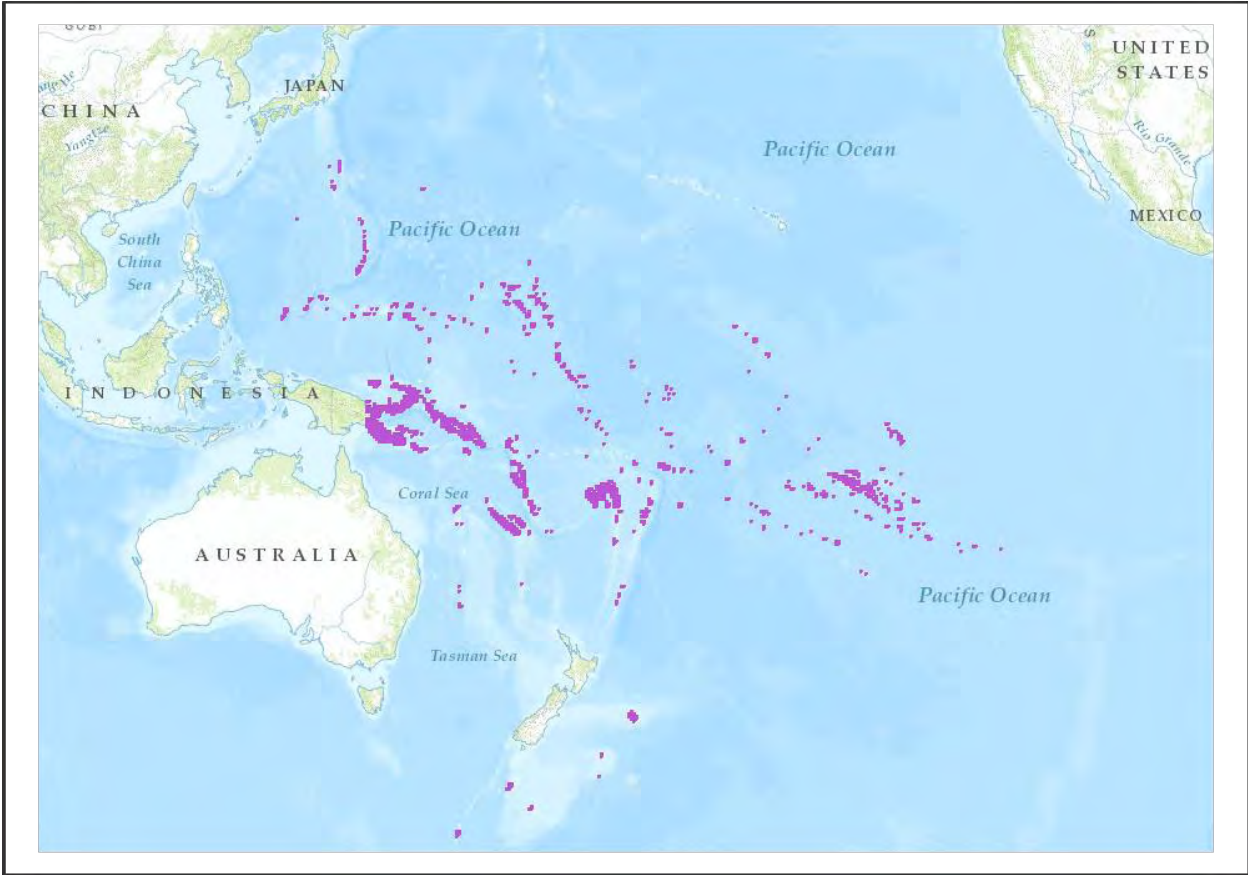
In other words, Esri has not changed the source of the data in terms of its geometric representation or attribution but rather adjusted the geographic projection from WGS84 to Web Mercator Auxiliary Sphere and transformed features from the OSM format into the Esri Geodatabase model while preserving the original character values for feature labeling. More details on feature mapping are listed below. This document outlines the procedures Esri used to obtain OSM source, process the content to a rendering database, and produce a cartographic product.

Extent in Africa

Extent of OSM Content in Esri's Basemaps in Purple Shading

Extent in Pacific Islands

Extent of OSM Content in Esri's Basemaps in Purple Shading

List of countries in Africa

Algeria	Democratic Republic of the Congo	Liberia	Rwanda
Benin	Djibouti	Libya	Saint Helena
Burkina Faso	Equatorial Guinea	Madagascar	Sao Tome and Principe
Burundi	Eritrea	Malawi	Senegal
Cameroon	Ethiopia	Mali	Seychelles
Cape Verde	Gabon	Mauritania	Sierra Leone
Central African Republic	The Gambia	Mauritius	Somalia
Chad	Ghana	Mayotte	South Sudan
Comoros	Guinea	Niger	Sudan
Congo, Republic of	Guinea-Bissau	Reunion-France	Tanzania
		Tunisia	Togo

List of Pacific Islands

American Samoa (US)	Heard Island and McDonald Islands	Palau
Christmas Island	Kiribati	Pitcairn (UK)
Cocos (Keeling) Islands	Marshall Islands	Samoa
Cook Islands (NZ)	Mauritius	Solomon Islands
Federated States of Micronesia	Nauru	Tokelau (NZ)
Fiji	New Caledonia	Tonga
French Polynesia (FR)	Niue (NZ)	Tuvalu
French Southern Territories	Norfolk Island	Vanuatu
Guam	Northern Mariana Islands	Wallis and Futuna (FR)

Themes

Esri included the following data themes in the ArcGIS Online Basemap content from OpenStreetMap.

Road Centerlines	Land Use Polygons
Administrative Boundary	Tree Points
Railways	Building Footprints
Walls & Fences	Landscaped Polygons
Trails and paths	Parking Lots
Waterlines and Water bodies	Points of Interest

General Workflow

1. Esri obtained the OSM source data from http://download.geofabrik.de/. The entire continent of Africa was downloaded in .osm file format.
2. Esri used the Load OSM tool in ArcMap to convert the .osm format to a file-based geodatabase of points, lines, and polygons (.gdb) as well as their respective attribute tags. This tool is available through Github (https://github.com/Esri/arcgis-osm-editor) as well as from the Esri Products website http://www.esri.com/software/arcgis/extensions/openstreetmap.
3. Next, Esri re-projected the file geodatabase from WGS84 to Web Mercator Auxiliary Sphere using ArcGIS.
4. The OSM.gdb was then converted to the Esri database model to build the cached basemaps in ArcGIS Online. The conversion involved configuring and executing the process in the ArcGIS Data Interoperability Extension. The conversion used the feature and attribute mapping outlined in the Mapping Matrix section in Appendix A.
5. Once the data was converted to the Esri database model, the layers were pointed to ArcGIS Map Documents (MXDs) which contained the parameters used for rendering the following basemaps: World Street Map, World Topographic Map, LightGray Canvas Base, Boundaries and Places, and Transportation.
6. The Map Documents were then cached to JPEG 90 compression format map tiles using ArcGIS Server from scale 1:288,000 – 1:1,000.
7. Then, the map tiles were deployed to the ArcGIS publishing environment as public map services.

Mapping Matrix

Esri used the table in Appendix A to map attributes from the OSM source to the Esri database model.

OSM Polygon Fields			AdministrativeAreaBoundaryLine	
boundary	admin_level	place	SUBTYPEFIELD	
administrative	2		0	
administrative	4	state	1	
administrative	6	county	2	
administrative	8	city	3	
administrative	8	hamlet	3	
administrative	8	suburb	3	
administrative	8	town	3	
administrative	8	village	3	

OSM Polygon Fields		Railroad	
railway	highway	RAILTYP	
rail		Rail	
funicular		Tram	
light_rail		Lightrail	
monorail		Monorail	
narrow_gauge		Rail	
subway		Subway	
tram		Tram	
	bus_guideway	Streetcar	

Appendix A

OSM Polygon Fields					RoadCenterline		
highway	osm_junction	route	waterway	sm_onewa	ROADCLASS	Carto	ONEWAYDIR
byway					Local	5	
byway	roundabout				TC Local	18	
dirtroad					4WD	19	
footway					Pedestrian	6	
ford					Other	23	
living_street					Local	5	
living_street	roundabout				TC Local	18	
motorway					Freeway	1	
motorway	roundabout				TC Freeway	14	
motorway_link					Ramp	8	
motorway_link	roundabout				TC Freeway	14	
pedestrian					Pedestrian	6	
primary					Highway	2	
primary	roundabout				TC Highway	15	
primary_link					Ramp Highway	9	
primary_link	roundabout				TC Highway	15	
residential					Local	5	
residential	roundabout				TC Local	18	
road					Local	5	
road	roundabout				TC Local	18	
secondary					Major Arterial	3	
secondary	roundabout				TC Major Arterial	16	
secondary_link					Ramp Major Arterial	10	
secondary_link	roundabout				TC Major Arterial	16	
service					Service	7	
steps					Pedestrian	6	
tertiary					Minor Arterial	4	
tertiary	roundabout				TC Minor Arterial	17	
tertiary;track					Local	5	
tertiary;track	roundabout				TC Local	18	
tertiary_link					Minor Arterial	4	

OSM Polygon Fields					RoadCenterline		
highway	osm_junction	route	waterway	osm_onewa	ROADCLASS	Carto	ONEWAYDIR
tertiary_link	roundabout				TC Minor Arterial	17	
track					4WD	19	
trunk					Freeway	1	
trunk	roundabout				TC Freeway	14	
trunk_link					Ramp	8	
trunk_link	roundabout				TC Freeway	14	
unclassified					Unknown	24	
unknown					Unknown	24	
unsurfaced					4WD	19	
		ferry			Ferry	13	
			ferry_way		Ferry	13	
				true			From-To
				yes			From-To

Appendix A

OSM Polygon Field	SiteAmenityLine	
barrier	AMENTYPE	Carto
city_wall	Retaining Wall	305
fence	Aluminum Perimeter Fence	300
gate	Gate	304
lift_gate	Gate	304
retaining_wall	Retaining Wall	305
wall	Retaining Wall	305
wire_fence	Chain Link Fence	302
wood_fence	Wooden Privacy Fence	309

OSM Polygon Field	Trail	
highway	Carto	
path	200	
cycleway	200	
bridleway	200	

OSM Polygon Field	Waterline	
waterway	WTRTYPE	Carto
canal	Canal or Ditch	101
dam	Dam or Weir	103
ditch	Canal or Ditch	101
drain	Canal or Ditch	101
dryriver	Stream or River-Intermittent	107
river	Stream or River	106
stream	Stream or River	106
wadi	Stream or River-Intermittent	107
weir	Dam or Weir	103

Appendix A

	OSM Polygon Fields																	FacilitySitePoint			
osm_name	barrier	geological	waterway	highway	aerialway	aeroway	railway	shop	military	power	man-made	leisure	historic	amenity	landuse	tourism	building	FEATURECODE	SUBTYPEFIELD	OWNTYPE	Carto
NOT NULL	NOT NULL																	Public Attraction or Landmark Building	820		15
NOT NULL		NOT NULL																Public Attraction or Landmark Building	820		15
NOT NULL			NOT NULL															Public Attraction or Landmark Building	820		15
NOT NULL				NOT NULL														Transportation Facility	810		11
NOT NULL					NOT NULL													Transportation Facility	810		11
NOT NULL						NOT NULL												Transportation Facility	810		11
NOT NULL							NOT NULL											Transportation Facility	810		11
NOT NULL								NOT NULL										Commercial or Retail Facility	720		3
NOT NULL									NOT NULL									DoD / Military Facility	830		24
NOT NULL										NOT NULL								Industrial Facility	710		2
NOT NULL											NOT NULL							Industrial Facility	710		2
NOT NULL												common						Park	820	Regional	20
NOT NULL												dog_park						Park	820	Regional	20
NOT NULL												garden						Park	820	Regional	20
NOT NULL												golf_course						Golf Course	820		18
NOT NULL												ice_rink						Ice Arena	820		15
NOT NULL												marina						Marina	820		15
NOT NULL												nature_reserve						Park	820	Regional	20
NOT NULL												park						Park	820	Regional	20
NOT NULL												playground						Arboretum / Botanical Garden	820		15
NOT NULL												recreation_ground						Park	820	Regional	20
NOT NULL												sports_centre						Sports Arena / Stadium	820		15
NOT NULL												stadium						Sports Arena / Stadium	820		15
NOT NULL												swimming_pool						Public Pool	820		15
NOT NULL												track						Racetrack / Dragstrip	820		15
NOT NULL												water_park						Amusement / Water Park	820		15
NOT NULL													memorial					National Symbol / Monument	820		15
NOT NULL													monument					National Symbol / Monument	820		15
NOT NULL														arts_centre				Auditorium / Concert Hall / Theater / Opera House	820		15
NOT NULL														baby_hatch				Health or Medical Facility	800		10
NOT NULL														bar				Restaurant / Eating Establishment	720		3
NOT NULL														bicycle_parking				Transportation Facility	810		11
NOT NULL														bicycle_rental				Commercial or Retail Facility	720		3
NOT NULL														biergarten				Restaurant / Eating Establishment	720		3
NOT NULL														brothel				Commercial or Retail Facility	720		3
NOT NULL														bus_station				Bus Station / Dispatch Facility	810		11
NOT NULL														café				Restaurant / Eating Establishment	720		3
NOT NULL														car_rental				Commercial or Retail Facility	720		3
NOT NULL														car_sharing				Park and Ride / Commuter Lot	810		11
NOT NULL														car_wash				Commercial or Retail Facility	720		3
NOT NULL														cinema				Auditorium / Concert Hall / Theater / Opera House	820		15
NOT NULL														college				College / University	730		4
NOT NULL														courthouse				Court House	830		23
NOT NULL														dentist				Health or Medical Facility	800		10
NOT NULL														doctors				Health or Medical Facility	800		10
NOT NULL														embassy				Government or Military Facility	830		23
NOT NULL														fast_food				Restaurant / Eating Establishment	720		3
NOT NULL														ferry_terminal				Ferry Terminal / Dispatch Facility	810		11
NOT NULL														fire_station				Fire Station / EMS Station	740		5
NOT NULL														food_court				Restaurant / Eating Establishment	720		3
NOT NULL														fountain				Historic Site / Point of Interest	820		15
NOT NULL														fuel				Gas Station	720		3
NOT NULL														hospital				Hospital / Medical Center	800		10
NOT NULL														kindergarten				School	730		4
NOT NULL														library				Library	820		15
NOT NULL														marketplace				Shopping Mall / Complex	720		3
NOT NULL														nightclub				Restaurant / Eating Establishment	720		3
NOT NULL														pharmacy				Pharmacy	800		10
NOT NULL														place_of_worship				House of Worship	820		15
NOT NULL														police				Law Enforcement	740		5
NOT NULL														post_office				Post Office	780		8
NOT NULL														prison				Prison / Correctional Facility	740		5
NOT NULL														pub				Restaurant / Eating Establishment	720		3
NOT NULL														public_building				Government or Military Facility	830		23
NOT NULL														restaurant				Restaurant / Eating Establishment	720		3
NOT NULL														school				School	730		4
NOT NULL														swimming_pool				Public Pool	820		15
NOT NULL														taxi				Transportation Facility	810		11
NOT NULL														theatre				Auditorium / Concert Hall / Theater / Opera House	820		15
NOT NULL														townhall				Municipal Government Facility	830		23
NOT NULL														university				College / University	730		4
	OSM Polygon Fields																	FacilitySitePoint			

Appendix A

osm_name	barrier	geological	waterway	highway	aerialway	aeroway	railway	shop	military	power	man-made	leisure	historic	amenity	landuse	tourism	building	FEATURECODE	SUBTYPEFIELD	OWNTYPE	Carto
NOT NULL														veterinary				Veterinary Hospital / Clinic	701		1
NOT NULL															cemetery			Cemetery	820		17
NOT NULL															commercial			Commercial or Retail Facility	720		3
NOT NULL															conservation			Park	820	Federal	21
NOT NULL															conservation			Park	820	Regional	20
NOT NULL															farm			Farm / Ranch	701		1
NOT NULL															farmland			Farm / Ranch	701		1
NOT NULL															farmyard			Farm / Ranch	701		1
NOT NULL															fishfarm			Fish Farm / Hatchery	701		1
NOT NULL															forest			Park	820	Federal	21
NOT NULL															forest			Park	820	Regional	20
NOT NULL															garages			Parking Lot Structure / Garage	810		11
NOT NULL															greenhouse_horticulture			Greenhouse / Nursery	701		1
NOT NULL															harbour			Harbor / Marina	810		11
NOT NULL															industrial			Industrial Facility	710		2
NOT NULL															landfill			Landfill	710		2
NOT NULL															market			Grocery Store	720		3
NOT NULL															meadow			Openspace	820		19
NOT NULL															military			DoD / Military Facility	830		24
NOT NULL															pier			Pier / Wharf / Quay / Mole	810		11
NOT NULL															quarry			Industrial Facility	710		2
NOT NULL															railway			Railroad Facility	810		11
NOT NULL															recreation_ground			Park	820	Regional	20
NOT NULL															retail			Commercial or Retail Facility	720		3
NOT NULL																alpine_hut		Public Attraction or Landmark Building	820		15
NOT NULL																artwork		Historic Site / Point of Interest	820		15
NOT NULL																attraction		Public Attraction or Landmark Building	820		15
NOT NULL																camp_site		Campground	820		15
NOT NULL																caravan_site		Campground	820		15
NOT NULL																chalet		Hotel / Motel	720		3
NOT NULL																guest_house		Hotel / Motel	720		3
NOT NULL																hostel		Hotel / Motel	720		3
NOT NULL																hotel		Hotel / Motel	720		3
NOT NULL																information		Visitor / Information Center	820		15
NOT NULL																motel		Hotel / Motel	720		3
NOT NULL																museum		Museum	820		15
NOT NULL																picnic_site		Picnic Area	820		15
NOT NULL																theme_park		Amusement / Water Park	820		15
NOT NULL																yes		Public Attraction or Landmark Building	820		15
NOT NULL																zoo		Zoo	820		15
																	brewery	Commercial or Retail Facility	720		3
																	castle	Historic Site / Point of Interest	820		15
																	convent	House of Worship	820		15
																	city_hall	Municipal Government Facility	830		23
																	factory	Industrial Facility	710		2
																	hall	Auditorium / Concert Hall / Theater / Opera House	820		15
																	monastery	House of Worship	820		15
																	monument	National Symbol / Monument	820		15
																	palace	Historic Site / Point of Interest	820		15
																	pavilion	Sports Arena / Stadium	820		15
																	stadium	Sports Arena / Stadium	820		15
																	store	Commercial or Retail Facility	720		3
																	train_station	Transportation Facility	810		11
																	warehouse	Industrial Facility	710		2
																	church	House of Worship	820		15
																	hangar	Transportation Facility	810		11
																	industrial	Industrial Facility	710		2

OSM Polygon Fields				PopulatedPlace			
place	osm_admin_level	osm_capital	osm_population	TYPE	TYPE_NUM	PCLASS	
city	2	yes		Country Capital	1		
city	4	yes		Order1 Capital	2		
city	6	yes		Order2 Capital	3		
city	8	yes		Order3 Capital	4		
city				PopulatedPlace	5		
hamlet							
isolated_dwelling							
locality							
neighbourhood							
suburb							
town							
village							
			0			0	
			1 to 2499			1	
			2400 to 9999			2	
			10000 to 29999			3	
			30000 to 99999			4	
			100000 to 299999			5	
			300000 to 999999			6	
			1000000 and up			7	

OSM Polygon Fields		Tree
natural	osm_name	Carto
tree	Elm	1
tree	Eucalyptus	2
tree	Maple	3
tree	Oak	4
tree	Orange	8
tree	Palm	5
tree	Pine	6
tree	Spruce	7

| | | OSM Polygon Fields | | | | | | | | | | | | FacilitySite | | | |
building	boundary	leisure	historic	railway	aerialway	aeroway	shop	military	power	amenity	landuse	tourism	natural	FCODE	SUBTYPEFIEL	OWNTYPE	Carto
IS NULL		common												Park	820	Regional	20
IS NULL		dog_park												Park	820	Regional	20
IS NULL		fishing												Public Attraction or Landmark Building	820		15
IS NULL		garden												Arboretum / Botanical Garden	820		15
IS NULL		golf_course												Golf Course	820		18
IS NULL		ice_rink												Ice Arena	820		15
IS NULL		marina												Marina	820		15
IS NULL		miniature_golf												Public Attraction or Landmark Building	820		15
IS NULL	national_park	nature_reserve												Park	820	Federal	21
IS NULL		nature_reserve												Park	820	Regional	20
IS NULL	national_park	park												Park	820	Federal	21
IS NULL		park												Park	820	Regional	20
IS NULL		playground												Park	820	Regional	20
IS NULL		recreation_ground												Park	820	Regional	20
IS NULL		sports_centre												Sports Arena / Stadium	820		15
IS NULL		stadium												Sports Arena / Stadium	820		15
IS NULL		swimming_pool												Public Pool	820		15
IS NULL		water_park												Amusement / Water Park	820		15
IS NULL			castle											Historic Site / Point of Interest	820		15
IS NULL			archaeological_site											Historic Site / Point of Interest	820		15
IS NULL			battlefield											Historic Site / Point of Interest	820		15
IS NULL			memorial											National Symbol / Monument	820		15
IS NULL			monument											National Symbol / Monument	820		15
IS NULL			ruins											Historic Site / Point of Interest	820		15
IS NULL			wayside_cross											Historic Site / Point of Interest	820		15
IS NULL			wayside_shrine											Historic Site / Point of Interest	820		15
IS NULL			wreck											Historic Site / Point of Interest	820		15
IS NULL			yes											Historic Site / Point of Interest	820		15
IS NULL				station										Railroad Station	810		11
IS NULL				turntable										Railroad Roundhouse / Turntable	810		11
IS NULL				platform										Railroad Facility	810		11
IS NULL					station									Railroad Station	810		11
IS NULL						runway								Airport Runway / Airfield	810		12
IS NULL						apron								Airport Runway / Airfield	810		12
IS NULL						terminal								Airport Terminal	810		13
IS NULL						aerodrome								Airport Terminal	810		13
IS NULL						taxiway								Airport Runway / Airfield	810		12
IS NULL						helipad								Helipad / Heliport / Helispot	810		11
IS NULL							NOT NULL							Commercial or Retail Facility	720		3
IS NULL								NOT NULL						DoD / Military Facility	830		24

		OSM Polygon Fields												FacilitySite			
		If building IS NULL then use these other fields															
building	boundary	leisure	historic	railway	aerialway	aeroway	shop	military	power	amenity	landuse	tourism	natural	FCODE	UBTYPEFIEL	OWNTYPE	Carto
IS NULL									NOT NULL					Industrial Facility	710		2
IS NULL										arts_centre				Auditorium / Concert Hall / Theater / Opera	820		15
IS NULL										baby_hatch				Health or Medical Facility	800		10
IS NULL										bar				Restaurant / Eating Establishment	720		3
IS NULL										bicycle_parking				Transportation Facility	810		11
IS NULL										bicycle_rental				Commercial or Retail Facility	720		3
IS NULL										biergarten				Restaurant / Eating Establishment	720		3
IS NULL										brothel				Commercial or Retail Facility	720		3
IS NULL										bus_station				Bus Station / Dispatch Facility	810		11
IS NULL										café				Restaurant / Eating Establishment	720		3
IS NULL										car_rental				Commercial or Retail Facility	720		3
IS NULL										car_sharing				Park and Ride / Commuter Lot	810		11
IS NULL										car_wash				Commercial or Retail Facility	720		3
IS NULL										cinema				Auditorium / Concert Hall / Theater / Opera	820		15
IS NULL										college				College / University	730		4
IS NULL										courthouse				Court House	830		23
IS NULL										dentist				Health or Medical Facility	800		10
IS NULL										doctors				Health or Medical Facility	800		10
IS NULL										embassy				Government or Military Facility	830		23
IS NULL										fast_food				Restaurant / Eating Establishment	720		3
IS NULL										ferry_terminal				Ferry Terminal / Dispatch Facility	810		11
IS NULL										fire_station				Fire Station / EMS Station	740		5
IS NULL										food_court				Restaurant / Eating Establishment	720		3
IS NULL										fountain				Historic Site / Point of Interest	820		15
IS NULL										fuel				Gas Station	720		3
IS NULL										hospital				Hospital / Medical Center	800		10
IS NULL										kindergarten				School	730		4
IS NULL										library				Library	820		15
IS NULL										marketplace				Shopping Mall / Complex	720		3
IS NULL										nightclub				Restaurant / Eating Establishment	720		3
IS NULL										pharmacy				Pharmacy	800		10
IS NULL										place_of_worship				House of Worship	820		15
IS NULL										police				Law Enforcement	740		5
IS NULL										post_office				Post Office	780		8
IS NULL										prison				Prison / Correctional Facility	740		5
IS NULL										pub				Restaurant / Eating Establishment	720		3
IS NULL										public_building				Government or Military Facility	830		23
IS NULL										restaurant				Restaurant / Eating Establishment	720		3
IS NULL										school				School	730		4
IS NULL										swimming_pool				Public Pool	820		15
IS NULL										taxi				Transportation Facility	810		11
IS NULL										theatre				Auditorium / Concert Hall / Theater / Opera	820		15
IS NULL										townhall				Municipal Government Facility	830		23
IS NULL										university				College / University	730		4
IS NULL										veterinary				Veterinary Hospital / Clinic	701		1

OSM Polygon Fields														**FacilitySite**			
		If building IS NULL then use these other fields															
building	boundary	leisure	historic	railway	aerialway	aeroway	shop	military	power	amenity	landuse	tourism	natural	FCODE	SUBTYPEFIELD	OWNTYPE	Carto
IS NULL											cemetery			Cemetery	820		17
IS NULL											commercial			Commercial or Retail Facility	720		3
IS NULL	national_park										conservation			Park	820	Federal	21
IS NULL											conservation			Park	820	Regional	20
IS NULL											farm			Farm / Ranch	701		1
IS NULL											farmland			Farm / Ranch	701		1
IS NULL											farmyard			Farm / Ranch	701		1
IS NULL											fishfarm			Fish Farm / Hatchery	701		1
IS NULL	national_park										forest			Park	820	Federal	21
IS NULL											forest			Park	820	Regional	20
IS NULL											garages			Parking Lot Structure / Garage	810		11
IS NULL											greenhouse_horticulture			Greenhouse / Nursery	701		1
IS NULL											harbour			Harbor / Marina	810		11
IS NULL											industrial			Industrial Facility	710		2
IS NULL											landfill			Landfill	710		2
IS NULL											market			Grocery Store	720		3
IS NULL											meadow			Openspace	820		19
IS NULL											military			DoD / Military Facility	830		24
IS NULL											pier			Pier / Wharf / Quay / Mole	810		11
IS NULL											quarry			Industrial Facility	710		2
IS NULL											railway			Railroad Facility	810		11
IS NULL											recreation_ground			Park	820	Regional	20
IS NULL											retail			Commercial or Retail Facility	720		3
IS NULL												alpine_hut		Public Attraction or Landmark Building	820		15
IS NULL												artwork		Historic Site / Point of Interest	820		15
IS NULL												attraction		Public Attraction or Landmark Building	820		15
IS NULL												camp_site		Campground	820		15
IS NULL												caravan_site		Campground	820		15
IS NULL												chalet		Hotel / Motel	720		3
IS NULL												guest_house		Hotel / Motel	720		3
IS NULL												hostel		Hotel / Motel	720		3
IS NULL												hotel		Hotel / Motel	720		3
IS NULL												information		Visitor / Information Center	820		15
IS NULL												motel		Hotel / Motel	720		3
IS NULL												museum		Museum	820		15
IS NULL												picnic_site		Picnic Area	820		15
IS NULL												theme_park		Amusement / Water Park	820		15
IS NULL												yes		Public Attraction or Landmark Building	820		15
IS NULL												zoo		Zoo	820		15
IS NULL													grassland	Openspace	820		19
IS NULL													heath	Openspace	820		19
IS NULL													scrub	Openspace	820		19
IS NULL													wood	Openspace	820		19

OSM Polygon Fields			CountyBoundary
boundary	admin_level	place	SUBTYPEFIELD
administrative	6	county	2

OSM Polygon Fields			LandscapeArea		
natural	landuse	leisure	SURFTYPE	FACILTIYID	Carto
beach			Sand		208
	brownfield		Dirt		200
	grass		Grass		201
		pitch	Sports Turf	Soccer	209
		track	Dirt	Track	200

OSM Polygon Fields			MunicipalBoundary
boundary	admin_level	place	SUBTYPEFIELD
administrative	8	city	3
administrative	8	hamlet	3
administrative	8	suburb	3
administrative	8	town	3
administrative	8	village	3

OSM Polygon Fields			StateBoundary
boundary	admin_level	place	SUBTYPEFIELD
administrative	4	state	1

OSM Polygon Field	StreetPavement		
amenity	SURFUSE	Carto	
parking	Parking Lot	308	

OSM Polygon Fields		Waterbody	
natural	waterway	WTRTYPE	Carto
bay		Bay or Inlet	100
marsh		Swamp or Marsh	114
mud		Swamp or Marsh	114
salt_pan		Playa	109
sand		Playa	109
water		Lake or Pond	106
wetland		Swamp or Marsh	114
	dam	Dam or Weir	102
	riverbank	Stream or River	112

Appendix A

building	railway	aerialway	leisure	shop	historic	aeroway	military	amenity	landuse	tourism	BUILDINGCLASS	FEATURECODE
OSM Polygon Fields											**BuildingFootprint**	
				If building NOT NULL AND building <> 'yes' then use these other fields								
yes											1	Building General
NOT NULL AND <> 'yes'	NOT NULL										5	Transportation Facility
NOT NULL AND <> 'yes'		NOT NULL									5	Transportation Facility
NOT NULL AND <> 'yes'			NOT NULL								8	Public Attraction or Landmark Building
NOT NULL AND <> 'yes'				NOT NULL							6	Commercial or Retail Facility
NOT NULL AND <> 'yes'					NOT NULL						9	Public Attraction or Landmark Building
NOT NULL AND <> 'yes'						NOT NULL					11	Airport Terminal
NOT NULL AND <> 'yes'							NOT NULL				2	Government or Military Facility
NOT NULL AND <> 'yes'								architect_office			1	Building General
NOT NULL AND <> 'yes'								arts_centre			9	Public Attraction or Landmark Building
NOT NULL AND <> 'yes'								baby_hatch			3	Health or Medical Facility
NOT NULL AND <> 'yes'								bank			1	Building General
NOT NULL AND <> 'yes'								bar			6	Commercial or Retail Facility
NOT NULL AND <> 'yes'								bicycle_parking			5	Transportation Facility
NOT NULL AND <> 'yes'								bicycle_rental			6	Commercial or Retail Facility
NOT NULL AND <> 'yes'								biergarten			6	Commercial or Retail Facility
NOT NULL AND <> 'yes'								brothel			6	Commercial or Retail Facility
NOT NULL AND <> 'yes'								bus_station			5	Transportation Facility
NOT NULL AND <> 'yes'								cafe			6	Commercial or Retail Facility
NOT NULL AND <> 'yes'								car_rental			6	Commercial or Retail Facility
NOT NULL AND <> 'yes'								car_sharing			5	Transportation Facility
NOT NULL AND <> 'yes'								car_wash			6	Commercial or Retail Facility
NOT NULL AND <> 'yes'								cemetery			1	Building General
NOT NULL AND <> 'yes'								cinema			9	Public Attraction or Landmark Building
NOT NULL AND <> 'yes'								college			4	Education Facility
NOT NULL AND <> 'yes'								courthouse			2	Government or Military Facility
NOT NULL AND <> 'yes'								crematorium			1	Building General
NOT NULL AND <> 'yes'								dentist			3	Health or Medical Facility
NOT NULL AND <> 'yes'								doctors			3	Health or Medical Facility
NOT NULL AND <> 'yes'								embassy			2	Government or Military Facility
NOT NULL AND <> 'yes'								fast_food			6	Commercial or Retail Facility
OSM Polygon Fields											**BuildingFootprint**	
				If building NOT NULL AND building <> 'yes' then use these other fields								
building	railway	aerialway	leisure	shop	historic	aeroway	military	amenity	landuse	tourism	BUILDINGCLASS	FEATURECODE
NOT NULL AND <> 'yes'								ferry_terminal			5	Transportation Facility
NOT NULL AND <> 'yes'								fire_station			2	Government or Military Facility
NOT NULL AND <> 'yes'								food_court			6	Commercial or Retail Facility
NOT NULL AND <> 'yes'								fountain			9	Public Attraction or Landmark Building
NOT NULL AND <> 'yes'								fuel			6	Commercial or Retail Facility
NOT NULL AND <> 'yes'								grave_yard			1	Building General
NOT NULL AND <> 'yes'								hospital			3	Health or Medical Facility
NOT NULL AND <> 'yes'								hunting_stand			1	Building General
NOT NULL AND <> 'yes'								kindergarten			4	Education Facility
NOT NULL AND <> 'yes'								library			2	Government or Military Facility
NOT NULL AND <> 'yes'								marketplace			6	Commercial or Retail Facility
NOT NULL AND <> 'yes'								nightclub			6	Commercial or Retail Facility
NOT NULL AND <> 'yes'								parking			5	Transportation Facility
NOT NULL AND <> 'yes'								pharmacy			3	Health or Medical Facility
NOT NULL AND <> 'yes'								place_of_worship			7	House of Worship
NOT NULL AND <> 'yes'								police			2	Government or Military Facility
NOT NULL AND <> 'yes'								post_office			2	Government or Military Facility
NOT NULL AND <> 'yes'								prison			2	Government or Military Facility
NOT NULL AND <> 'yes'								pub			6	Commercial or Retail Facility
NOT NULL AND <> 'yes'								public_building			2	Government or Military Facility
NOT NULL AND <> 'yes'								recycling			1	Building General
NOT NULL AND <> 'yes'								restaurant			6	Commercial or Retail Facility
NOT NULL AND <> 'yes'								sauna			1	Building General
NOT NULL AND <> 'yes'								school			4	Education Facility
NOT NULL AND <> 'yes'								shelter			1	Building General
NOT NULL AND <> 'yes'								studio			1	Building General
NOT NULL AND <> 'yes'								Swimming_pool			8	Public Attraction or Landmark Building

building	railway	aerialway	leisure	shop	historic	aeroway	military	amenity	landuse	tourism	BUILDINGCLASS	FEATURECODE
NOT NULL AND <> 'yes'								taxi			5	Transportation Facility
NOT NULL AND <> 'yes'								theatre			9	Public Attraction or Landmark Building
NOT NULL AND <> 'yes'								townhall			2	Government or Military Facility
NOT NULL AND <> 'yes'								university			4	Education Facility
OSM Polygon Fields											**BuildingFootprint**	
If building NOT NULL AND building <> 'yes' then use these other fields												
building	railway	aerialway	leisure	shop	historic	aeroway	military	amenity	landuse	tourism	BUILDINGCLASS	FEATURECODE
NOT NULL AND <> 'yes'								veterinary			6	Commercial or Retail Facility
NOT NULL AND <> 'yes'									commercial		6	Commercial or Retail Facility
NOT NULL AND <> 'yes'									garages		5	Transportation Facility
NOT NULL AND <> 'yes'									industrial		12	Industrial Facility
NOT NULL AND <> 'yes'									landfill		12	Industrial Facility
NOT NULL AND <> 'yes'									market		6	Commercial or Retail Facility
NOT NULL AND <> 'yes'									military		2	Government or Military Facility
NOT NULL AND <> 'yes'									railway		5	Transportation Facility
NOT NULL AND <> 'yes'									recreation_ground		8	Public Attraction or Landmark Building
NOT NULL AND <> 'yes'									retail		6	Commercial or Retail Facility
NOT NULL AND <> 'yes'										alpine_hut	8	Public Attraction or Landmark Building
NOT NULL AND <> 'yes'										artwork	9	Public Attraction or Landmark Building
NOT NULL AND <> 'yes'										attraction	8	Public Attraction or Landmark Building
NOT NULL AND <> 'yes'										camp_site	8	Public Attraction or Landmark Building
NOT NULL AND <> 'yes'										caravan_site	8	Public Attraction or Landmark Building
NOT NULL AND <> 'yes'										chalet	10	Hotel / Motel
NOT NULL AND <> 'yes'										guest_house	10	Hotel / Motel
NOT NULL AND <> 'yes'										hostel	10	Hotel / Motel
NOT NULL AND <> 'yes'										hotel	10	Hotel / Motel
NOT NULL AND <> 'yes'										information	8	Public Attraction or Landmark Building
NOT NULL AND <> 'yes'										motel	10	Hotel / Motel
NOT NULL AND <> 'yes'										museum	9	Public Attraction or Landmark Building
NOT NULL AND <> 'yes'										picnic_site	8	Public Attraction or Landmark Building
NOT NULL AND <> 'yes'										theme_park	8	Public Attraction or Landmark Building
NOT NULL AND <> 'yes'										yes	8	Public Attraction or Landmark Building
NOT NULL AND <> 'yes'										zoo	8	Public Attraction or Landmark Building