511 Data Exchange including an Open511 Protocol

Traffic Event

January 1, 2019

Version 1.2

METROPOLITAN TRANSPORTATION COMMISSION

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Document History

Description	Version	Date
Working Draft - addressed reorganization comments	0.9	08/28/13
First published version with transit, traffic, tolling, and parking APIs	1.0	09/13/13
Update Traffic APIs' structure information, parameters and filters, and their examples to sync with specification provided on Open511.org.	1.0	5/2/2014
Add GTFS-realtime Trip Updates and Vehicle Positions, and their examples.	1.0	5/7/2014
Minor updates and corrections	1.0	5/28/2014
Add sample request endpoint and parameters and filters tables for Section 3.14 and 3.15. Update references for resource endpoints with their exact URL.	1.0	6/12/2014
Minor updates to Section 3.14 and 3.15	1.0	7/17/2014
Split API specification document into sub docs for each API domain	1.0	8/26/2014
Minor updates to remove Transit references	1.0	9/24/2014
Removed APIs that are not planned to be developed	1.0	08/01/2017
Updated to add road closure polyline	1.1	08/19/2018
Updated to include splitting longer geometries into multiple 100 point Linestring.	1.2	11/01/2018
Updated to reflect that Linestring will always be 100 points in length and won't be controlled by an API parameter.	1.3	02/25/2018

1   Overview

This document focuses on data exchange APIs for the traffic event data. For a complete overview of 511 Data Exchange, please refer to *Open 511 Data Exchange Specifications – Overview* document. The overview document covers:

- General information about 511 Data Exchange

- Different protocols and data feeds available through Open 511 APIs

- Standard Discovery API specifications.

- Encodings and Protocols along with reference to standard documentation.

- Technical Guidelines

It is highly recommened that all users of Open 511 Data Exchange review the information in the Overview document.

2   Traffic API

The core traffic data resources consist of traffic events. Open511provides message structure and API endpoint for accessing these resources. Open511 will also provide metadata/lookup information that can be used by consumers to filter and limit information during requests.

2.1   API: Event

The event resource provides information about various types of events within a jurisdiction. These can be active incident, scheduled construction/roadway work or public events which may or may not have an impact on traffic conditions. Consumers can request list of all the active events or they can use additional filters such as city, roads to restrict the results as per their needs and use case.

The event structure is the main element of the events collection. Although an event should be considered as independent, it is possible that one major event (mainly construction) could be split across several events. Below is a message structure of Event.

Field	Type	Mandatory/ Optional	Description
Self	Link	*Mandatory*	Self link to the current resource.
Jurisdiction	Link	*Mandatory*	Link to the jurisdiction publishing the event.
id	String	*Mandatory*	A globally unique ID for the event, following the format jurisdiction-id/event-id. For example, 511.org/8c3f2. The first segment of the event ID is the jurisdiction ID. The second segment is a

			string ID that must be unique within its jurisdiction. It can contain the characters a-zA-Z0-9_.-. The two segments are separated with a /. The event's self link is of course itself a globally unique ID, and it is a suggested practice to use the event ID in the event URL, but a separate ID field is included for user-friendliness.
Status	Enum	*Mandatory*	Status of the event. The status allows a client to determine if the current event should be considered as currently effective. Value list: - ACTIVE : The event should be considered as effective - ARCHIVED : The event should not be considered as effective
Headline	Free Text	*Mandatory*	Title of the event. Should be shorter than 500 characters.
event_type	Enum	*Mandatory*	Basic type of event. Value list - CONSTRUCTION : planned road work - SPECIAL_EVENT : special events (fair, sport event, etc.) - INCIDENT : accidents and other unexpected events - WEATHER_CONDITION : Weather condition affecting the road - ROAD_CONDITION : Status of the road that might affect travelers.

Severity	Enum	*Mandatory*	Severity of the event. Value list:
			
			    MINOR: the event has very limited impact on traffic.
			    MODERATE: the event will have a visible impact on traffic but should not create significant delay; if there is a delay, it should be small and local.
			    MAJOR: the event will have a significant impact on traffic, probably on a large scale.
			    UNKNOWN: the impact is unknown, for example in the case of an accident that has been recorded without any precise description.

Geography	Geospatial	Mandatory	Geographical information about the event. Can be Point, MultiPoint, LineString, MultiLineString, or Polygon.
closure_geometry	Geospatial	Optional	Multistring geometry for closure associated with an event. The individual LineStringMember represents affected segment of a road. For events that expand over non-contiguous road segments, for example a closure affecting both sides of the freeway, each side will be represented by separate LineStringMember. For continuous event, entire geometry will be split into multiple LineStringMembers of 100 points each, due to limitation on number of points that can be included in one line string. When this happens, end point of one line string will be the start point of the next line string.
Created	DateTime (UTC)	Mandatory	When the event was initially created.
Updated	DateTime (UTC)	Mandatory	When the content of the event last changed. Will be the same as created if no updates have occurred.
Schedule	schedule elements	Mandatory	Indicates the dates and times when the event is active.
Timezone	timezone	Optional	Timezone to be used for this event, e.g. America/Montreal. If not provided, the event is assumed to be in the default timezone of its jurisdiction.
Description	Free text	Optional	*But strongly recommended.* Description of the event. Plain text description of the event, the reason for the event and any other relevant information for travelers.
event_subtypes	Collection of event_subtype elements	Optional	List of values to provide more detail about the type of event.
— event_subtype	Enum	Optional	- ACCIDENT - SERIOUS_ACCIDENT - NUMEROUS_ACCIDENTS - STALLED_VEHICLE - SPILL - OBSTRUCTION

			- MAJOR_HAZARD - DEMONSTRATION - ROAD_CONSTRUCTION - WORK_IN_THE_MEDIAN - NARROW_LANES - TRAFFIC_ALTERNATING_DIRECTIONS - BRIDGE_OPERATIONS - BLASTING - WORK_ON_UNDERGROUND - EMERGENCY_MAINTENANCE - SPORTING_EVENT - MAJOR_EVENT - CONCERT - FESTIVAL - FIREWORKS - PARADE - CROWD - SEVERE_WEATHER - HEAVY_SNOW - SNOW - ICE_GLAZE - HEAVY_FROST - ICE_STORM - DAMAGING_HAIL - THUNDERSTORM - HEAVY_DOWNPOUR - TORNADO - HURRICANE - STRONG_WINDS - DENSE_FOG - FREEZING_FOG - ICE_FOG MIST - VISIBILITY_REDUCED - VISIBILITY_BLOCKED - BLOWING_SNOW - BLOWING_DUST - SANDSTORM - INSECT_SWARMS - IMPASSABLE - ALMOST_IMPASSABLE - PASSABLE_WITH_CARE - SURFACE_WATER_HAZARD - HYDROPLANING_DANGER - SLIPPERY - MUD - LOOSE_GRAVEL - OIL_ON_ROADWAY - ICE - BLACK_ICE - WET_ICY_ROAD - SLUSH

			- FROZEN_SLUSH - SNOW - PACKED_SNOW - PLOWED_SNOW - POWDER_SNOW - DEEP_SNOW
Certainty	Enum	*Optional*	Degree of certainty of the event. Should only be used for unplanned events (e.g. incidents, weather conditions and pavement conditions events). Value list to be confirmed. Could be observed/likely/possible/unknown. Value list - OBSERVED - LIKELY - POSSIBLE - UNKNOWN
grouped_events	Collection of links	*Optional*	This structure is used to group events together. In specific situations (for example complex construction projects), several events might be related together. This field should be used to point a related event.
— related	Link	*Optional*	Link pointing to another event resource related to the current event.
Detour	Free Text	*Optional*	Description of a detour route to avoid this event.
Roads	Collection of road elements	*Optional*	List of roads affected by the current event. One event can impact several roads.
Areas	Collections of area elements	Optional	Areas affected by the event.
attachments	Collection of attachment links	Optional	Collection of attachments providing additional information about the event (PDFs, images, etc.)
— related	Link	Optional	Link to an attachment. While only the URL is mandatory, more information may be provided via type, length, title, and hreflang, with semantics as in Atom.

Road   structure

The road data format is used to provide information about the road(s) affected by an event. The structure of road_affected is:

Field	Type	Mandatory/ Optional	Description
Name	Free Text	*Mandatory*	Name of the road affected by the event. Ideally, road names should be formatted in accordance with national or regional standards, and the same road should be named consistently in different events.
self / url	Link	*Optional*	Link to the Road resource for this road.
from	Free text	*Optional*	*Mandatory if to is provided.* Approximate start point of the event on the road. It can be an intersection with another street or it can be a mileage indication. This value should not be used to determine the exact start point since it can be an approximation. The geometry field should be considered as the reference for exact location. If no *to* field is provided, this field means "nearby".
To	Free text	*Optional*	Approximate end point of the event on the road. It can be an intersection with another street or it can be a distance indication.
State	Enum	*Optional*	Whether the road segment is closed or not. Value list: - CLOSED (road closed in the given direction) - SOME_LANES_CLOSED (but the road remains open) - SINGLE_LANE_ALTERNATING (a single lane alternates between both directions of traffic) - ALL_LANES_OPEN
direction	Enum	*Conditional*	*Mandatory if state is provided.* Direction of the road that is affected by the event. If a lane_status is provided, the direction becomes mandatory. In the same situation, if both directions are affected, two occurrences of the road element are needed, one for each direction and with a dedicated lane_status for each direction. Value list: - N

			- NW - W - SW - S - SE - E - NE - NONE - BOTH
lanes_open	Integer	*Optional*	Allowed only if **state** is SOME_LANES_CLOSED and direction is not BOTH. Number of lanes in the given direction remaining open during this event.
lanes_closed	Integer	*Optional*	Allowed only if **state** is SOME_LANES_CLOSED and direction is not BOTH. Number of lanes in the given direction closed during this event.
impacted_systems	Collection of *impacted_system* elements	*Optional*	Allows provision of information about other systems that can be affected.
— impacted_system	Enum	*Optional*	Value list of systems: ROAD SIDEWALK BIKELANE PARKING
restrictions	Collection of *restriction* elements	*Optional*	Some events may come with some restrictions affecting vehicles using the road (speed, weight).

Restriction structure

Field	Type	Mandatory/ Optional	Description

restriction_type	Enum	*Mandatory*	Type of restriction that affects vehicles. Value list:
			
			    SPEED: Limitation of the speed of vehicles. Unit is in kilometers/hour.
			    WIDTH: Width limitation, mainly for trucks. Unit is meters.

			HEIGHT: Height limitation, mainly for trucks. Unit is meters WEIGHT: Weight limitation for vehicles. Unit is metric tons. AXLE_WEIGHT: Weight limitation per axle for truck. Unit is metric tons.
Value	Float	*Mandatory*	Value of the limitation. For example, a speed limitation of 60km/h will have a value of 60 with a **restriction_type** set to SPEED

<u>*Schedule structure*</u>

The schedule defines timelines of an event.

Field	Type	Mandatory/ Optional	Description
recurring_schedules	Collection of *recurring_schedule* elements	Conditional	*One (and only one) of* recurring_schedules *or* intervals *is required* The recurring_schedule structure expresses repeating schedules, like "Every day starting December 4th", or "Mondays 9 to 11 from September 1 to October 30." An event can include override them.
— **start_date**	Date	*Mandatory*	**Mandatory in each** recurring_schedule Start date of this schedule.
— **end_date**	Date	Optional	End date of the event. If a start date but no end date is provided, the schedule continues indefinitely.
— **daily_start_time**	Time	Optional	Daily start time of the event, as HH:mm , e.g. 13:00 . Applies to each day in this recurring_schedule .
— **daily_end_time**	Time	Conditional	**Mandatory if** daily_start_time **is provided, not allowed otherwise**

			Daily end time of the event, as HH:mm , e.g. 17:30 . Applies to each day in this recurring_schedule .
— **days**	collection of *day* elements	*Optional*	Contains a day tag for every day of the week during which this recurring_schedule is active. Days are indicated with an integer, with (following the ISO standard) Monday being 1 and Sunday 7. So, for an event active on Monday and Wednesday, <days><day>1</day><day>3</day></days>. If omitted, the schedule is active every day between its start and end dates.
exceptions	Collection of exception elements	*Optional*	*if present, there must be a* recurring_schedules *element (and no* intervals *)* Exceptions override recurring schedules.
— **exception**	Custom time format	*Mandatory*	An exception provides the definitive schedule for a specific date. It overrides any recurring_schedule information for that date. An exception of the form YYYY-MM-DD indicates that this event is **not** in effect for the given date. An exception of the form YYYY-MM-DD HH:mm- HH:mm indicates that, on that date, the event is in effect only between the provided start and end time. If there are multiple disjoint periods on that day, more than one start-end period can be included: YYYY-MM- DD HH:mm-HH:mm HH:mm-HH:mm .
intervals	Collection of interval elements	Conditional	*One (and only one) of* recurring_schedules *or* intervals *is required*

			Represent an event's schedule as a list of explicit periods. An event must use either `recurring_schedules` or `intervals`, not both. If this contains more than one `interval`, their time periods may not overlap. This also implies that no more than one can omit an end time.
— **interval**	Custom time format, largely a subset of ISO8601 intervals	*Mandatory*	Defines a specific period of time during which the schedule is in effect; two datetimes (without timezone offset) joined with a `/`. For example, a period from 9 p.m. September 1 to 8 a.m. September 2 would be `2014-09-01T21:00/2014-09-02T08:00`. The second datetime, after the slash, may be omitted. So, to indicate a period from 9 p.m. September 1 until further notice, use: `2014-09-01T21:00/`

Sample request endpoint for events

Request Type	**GET**
Request Endpoint Example	For e.g. http://api.511.org/Traffic/Events

Parameters and Filters supported with the request

Parameter	Mandatory/ Optional	Description
format	*Optional*	The response format (json/xml) desired. If none specified, then default response would be JSON. e.g. ?format=json (returns json respone for v1, if v1 is the latest version or specified via version parameter) ?format=xml

		(returns XML response for v1)
version	*Optional*	The version of Open511 desired. e.g ?version=v1 (returns response for v1 in conjunction with format requested.
api_key	Mandatory	Unique key assigned to a user after they signup for Open511.
status	*Optional*	By default the API should only send active events. Supported values: ACTIVE Default value, returns only active events. ARCHIVED Returns only archived events ALL Returns both active and archived events.
in_effect_on	*Optional*	Show only events that are, according to their schedules, in effect at a specific time, or during a specific time period. Can be either a single time, or a start and end time joined by a comma. The times must be complete ISO 8601 datetimes, with or without a timezone. So to find, for example, all events in effect at some point on June 20th, you would ask for events between 00:00 and 23:59: in_effect_on=2013-06-20T00:00,2013-06-20T23:59 Or, to find events in effect within the next two hours, you'd get the current UTC timestamp — let's say it's 2013-06-20T17:40Z — and then request ?in_effect_on=2013-06-20T17:40Z,2013-06-20T19:40Z. You can also use the special value ?in_effect_on=now to show events currently taking place. If no timezone is provided, as in the first example, the server searches according to the local time as entered in the event. For example, if highways are closed for an hour at midnight on January 1st in both London and LA, ?in_effect_on=2014-01-01T00:00 would return both events (even though there's no single moment in time when the roads are closed in both cities), whereas the timezone-aware ?in_effect_on=2014-01-01T00:00Z would return only the London event. If this argument is not provided, the API should not perform any filtering based on the event schedules.
severity	*Optional*	Filter by the value of the severity field. OR queries are possible via a comma-separated list: ?severity=MINOR,MODERATE.
Bbox	Optional	Filter events by geographical bounding box. Four comma-separated coordinates, xmin, ymin, xmax, ymax.
geography	Optional	Filtering near a point or linestring. The geography value should be provided as a WKT string in WGS84 latitude/longitude. Example: ...geography=POINT (-73.64 45.52). The geography must be used in conjuction with the tolerance filter.

tolerance	Conditional	Provide a tolerance of radius in meters around if a POINT or LINESTRING is used as filtering parameter. For example ...geography=POINT+(-73.64+45.52)&tolerance=50 would retrieve all the events within a circle of 50m radius around the selected point.
jurisdiction	Optional	The ID or URL of a jurisdiction, in order to show only events from a given jurisdiction. Use a comma-separated list to make OR queries. Example: jurisdiction=511.org.
event_type	Optional	Filter events using the event_type value list. Use a comma-separated list to make OR queries.
event_subtype	Optional	Filter events using the event_subtype value list. Use a comma-separated list to make OR queries.
created	Optional	Filter events based on the creation date and time. This parameter can (and generally will) be preceded with one of the following operators: < <= > >=. These allow searches for events created before or after a supplied time, e.g. created=>2013-05-10T12:00Z.
updated	Optional	Filter events based on the last update timestamp. Accepts the same < <= > >= operators as created. Note: by default, the servers should only return ACTIVE events. When using the updated filter, in order to get events going from ACTIVE to ARCHIVED, the client must ask for all events: ...?status=ALL
road_name	Optional	Shows only events containing a road element with the provided name. Case-sensitive exact match. Use a comma-separated list to make OR queries.
Road	Optional	Shows only events containing a road element linking to a road element with the provided id. Use a comma-separated list to make OR queries.
Area	Optional	Shows only events containing an area element with the provided id. Use a comma-separated list to make OR queries.

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Limit	Optional	The maximum number of events to return in a single paginated response. The default value for this (i.e. how many items to include on a page if no limit parameter is provided) is up to individual implementors. Likewise, implementors may want to enforce a maximum value for this parameter in order to conserve server resources, so that a ?limit=10000 query would still return only e.g. 500 events per page. However, if such a maximum is implemented, it must not be lower than 500.

The traffic event structure response for XML is shown in Appendix A Section A.I.1 and for JSON is shown in Appendix B Section B.I.1.

Possible Errors

Listed below are HTTP status code and message returned for certain common errors:

- 500 - Internal Server Error (System has issues processing your request)
- 401 – Unauthorized (Invalid API key)
- 404 – Not found (If an individual event resource cannot be located).

3   Appendix A: API Response Messages- XML

3.1   Traffic XML

A.1.1 Example Traffic Event Structure Response (XML)

```xml
<open511
      xmlns:gml="http://www.opengis.net/gml"
      xml:lang="en"
      xml:base="http://api.511.org"
      version="v1"
   >
<events>
  <event>
  <status>ACTIVE</status>
  <link rel="self" href="/traffic/events/511.org/149"/>
  <link rel="jurisdiction" href="http://api.511.org/jurisdictions/511.org/"/>
  <id>511.org/149</id>
  <headline>CHP : Roadwork on CA-160 NorthBound between Main St (Antioch) and Antioch
Bridge - Toll Plaza (Oakley) Acceleration lane closed Expect delays</headline>
  <event_type>INCIDENT</event_type>
  <severity>UNKNOWN</severity>
  <created>2014-05-01T19:28:31Z</created>
  <updated>2014-05-01T19:28:31Z</updated>
  <geography>
```

```
      <gml:Point srsName="EPSG:4326">
        <gml:coordinates>-121.75382399999999,38.004908</gml:coordinates>
      </gml:Point>
    </geography>
    <roads>
      <road>
        <name>CA-160</name>
        <from>Main St</from>
        <to>Antioch Bridge - Toll Plaza</to>
        <direction>NorthBound</direction>
        <state>Open</state>
      </road>
    </roads>
    <schedules>
      <schedule>
        <start_date>2014-05-01</start_date>
      </schedule>
    </schedules>
</event>
<event>
  <status>ACTIVE</status>
  <link rel="self" href="/traffic/events/511.org/209"/>
  <link rel="jurisdiction" href="http://api.511.org/jurisdictions/511.org/"/>
  <id>511.org/209</id>
  <headline>CHP : Obstruction on US-101 N NorthBound before Coyote Creek Golf Dr (San
Jose) left lane blocked Expect delays</headline>
  <event_type>INCIDENT</event_type>
  <severity>UNKNOWN</severity>
  <created>2014-05-02T01:13:55Z</created>
  <updated>2014-05-02T02:43:16Z</updated>
  <geography>
    <gml:Point srsName="EPSG:4326">
      <gml:coordinates>-121.69346399999999,37.19068</gml:coordinates>
    </gml:Point>
  </geography>
  <roads>
    <road>
      <name>US-101 N</name>
      <from>Coyote Creek Golf Dr</from>
      <to/>
      <direction>NorthBound</direction>
      <state>Open</state>
    </road>
  </roads>
  <schedules>
    <schedule>
      <start_date>2014-05-01</start_date>
    </schedule>
  </schedules>
<closure_geometry xmlns:gml="http://www.opengis.net/gml" xmlns="http://511.org/open511-
extensions">
<gml:MultiLineString srsName="urn:ogc:def:crs:EPSG::4326">
<gml:LineStringMember>
<gml:LineString>
<gml:posList>
-121.905403778982,37.4664031808211,-121.905516999724,37.4665420000284,-
121.905530999967,37.4665599997276,-121.905550000234,37.4665840000328,-
121.905665999687,37.4667269999391,-121.906012000191,37.4671670002383,-
121.906404999653,37.4676470002688,-121.906715000173,37.4680369998512,-
```

```
121.907135000298,37.4685380001628,-121.907393999865,37.4688380001212,-
121.907569999593,37.4690580000859,-
121.907808999967,37.4693440001416,121.938268000236,37.512444999755,-
121.938432000268,37.512730000037,-121.938663000246,37.5131339997496,-
121.93890799957,37.5135559999043,-121.939175000432,37.514022000349,-
121.939356000182,37.5143290001285,-121.939525000237,37.5146310001649,-
121.939581665124,37.5147344758603
</gml:posList>
</gml:LineString>
</gml:LineStringMember>
<gml:LineStringMember>
<gml:LineString>
<gml:posList>
-121.941468948045,37.5310149698319,-121.941338999731,37.531097000203,-
121.941265999936,37.5311409999076,-121.941188999943,37.5311869999595,-
121.941030999759,37.5312800001638,-121.940669000259,37.5314930001716,-
121.940090999951,37.5318160000229,-121.939761000238,37.5319949996535,-
</gml:posList>
</gml:LineString>
</gml:LineStringMember>
<gml:LineStringMember>
<gml:LineString>
<gml:posList>
-121.885072507042,37.574436747037,-121.885018000099,37.5744620003296,-
121.884722999648,37.5745870001079,-121.884567999837,37.5746469998415,-
121.884411000377,37.5747040000065,-121.884217000208,37.5747680001896,-
121.88396199994,37.5748509998558,-121.883647000295,37.5749509997424,-
121.883442000256,37.5750149997133,-121.882085999623,37.5754569997014,-
121.881545999848,37.5756320001267,-121.88146600038,37.5756530000647,-
121.880771999721,37.5758790003444,-121.880544000115,37.5759670002614,-
121.88040299965,37.5760220002457,-121.880283999824,37.576072999716,-
121.880199000334,37.5761110002897,-121.880077000135,37.5761699999243,-
121.879953000286,37.5762310001006,-121.879832999737,37.5762890000585,-
121.879713999912,37.5763520000107,-121.879580000017,37.5764280001421
</gml:posList>
</gml:LineString>
</gml:LineStringMember>
</gml:MultiLineString>
</closure_geometry>
</event>
</events>
   <pagination>
     <offset>0</offset>
     <link rel="next" href="/traffic/events/?api_key={api_key}&limit=2&amp;offset=2"/>
   </pagination>
   <link rel="self" href="/traffic/events/?api_key={api_key}&limit=2&amp;offset=0"/>
   <link rel="up" href="/"/>
 </open511>
```

4   Appendix B: API Response Messages- JSON

4.1   Traffic JSON

B.1.1 Example Traffic Event Structure Response (JSON)

```
{
  "events": [{
    "url": "/traffic/events/511.org/149",
    "jurisdiction_url": "http://api.511.org/jurisdictions/511.org/",
    "id": "511.org/149",
    "status": "ACTIVE",
    "headline": "CHP : Roadwork on CA-160 NorthBound between Main St (Antioch) and
Antioch Bridge - Toll Plaza (Oakley) Acceleration lane closed Expect delays",
    "event_type": "INCIDENT",
    "severity": "UNKNOWN",
    "created": "2014-05-01T19:28:31Z",
    "updated": "2014-05-01T19:28:31Z",
    "geography": {
     "type": "Point",
     "coordinates": [
       -121.753824,
       38.004908
     ]
    },
    "roads": [{
     "name": "CA-160",
     "from": "Main St",
     "to": "Antioch Bridge - Toll Plaza",
     "direction": "NorthBound",
     "state": "Open"
    }],
    "schedules": [{
     "start_date": "2014-05-01"
    }],
    "+closure_geography": {
     "type": "MultiLineString",
     "coordinates": [
       [
         [
           -121.965344339091,
           38.0227069562185
         ],
         [
           -121.965265000299,
           38.0226909996807
         ],
         [
           -121.964901000251,
           38.0226219996731
         ],
         [
           -121.963347999975,
           38.0223280002051
         ],
         [
           -121.963122999844,
           38.0222860001848
```

```
            ],
            [
              -121.962568,
              38.0221690001024
            ],
            [
              -121.962037000446,
              38.0220539997063
            ],
            [
              -121.961545000351,
              38.0219580000743
            ],
            [
              -121.960780000445,
              38.0218160002701
            ],
            [
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