Scenario 01 - All Engines (Tracked Changes 2)

Wednesday, June 2, 2021   8:35 AM

Scenario Info

Big Building, the casino
- ID: CASINO
- Base elevation: 0
- Tiers of Current Building
    1. 40 ft
- Type: Rectangular
- Reference Point: SW Corner
- X-Coordinate: 524056.64 m
- Y-Coordinate: 4245718.52 m
- X-Length: 570 ft
- Y-Length: 700 ft
- Rotation Angle: 0 deg

Smaller building/yard that contains engines
- ID: YARD
- Base elevation: 0
- Tiers of Current Building
    1. 25 ft
- Type: Rectangular
- Reference Point: SW Corner
- X-Coordinate: 524028.9 m
- Y-Coordinate: 4245790.36 m
- X-Length: 46 ft
- Y-Length: 136 ft
- Rotation Angle: 0 deg

Source Used for Run:
- Source ID: ~~STCKALL~~ ALL50
    - Treating all 5 engines as 1
- X-Coordinate: 524036.4 m
- Y-Coordinate: 4245812.86 m
- Release Height: 15.67 ft
    - 188.02 inches (Sheila emailed)
- Base Elevation: 27.0 m
    - For location: 38.360393, -122.724930
    - From https://www.freemaptools.com/elevation-finder.htm
- Release Type: Vertical
- Emission Rate: 0.755 lb/hr
    - 1500*8/453.59 = 26.4556 lb/hr (from Graton Calculations spreadsheet)
    - 26.4556*50/8760 = 0.151 lb/hr
        - Scaling for 50 hours of operation per year instead of 8760
    - 0.151 * 5 = 0.755 lb/hr
        - 5 emergency engines total
- ~~Emission Rate: 0.3347 lb/hr~~
    - ~~0.005753953821*2038=11.726557887198 lb/hr~~
        - ~~0.005753953821 lb/hp-hr, 2038 hp (from Graton Calculations spreadsheet)~~
    - ~~11.726557887198*50/8760=0.066932408032 lb/hr~~

- - - ~~Scaling for 50 hours of operation per year instead of 8760~~
  - ○ ~~0.066932408032 * 5=0.33466204016 lb/hr~~
    - ~~5 emergency engines total~~
- Fixed
- Gas Exit Temperature: 435 C
  - ○ From specs, 435 C
- Stack Inside Diameter: 0.418 m
  - ○ 14 inch diameter
  - ○ Total area = $5*pi*(7)^2$
  - ○ Total radius = 7*sqrt(5)=15.65247584249853
  - ○ Total diameter = 15.6525*2 = 31.305 in
  - ○ 31.305/12 = 2.6088
- Gas Exit Velocity: 57.391 m/s
  - ○ autopopulated
- Gas Exit Flow Rate: 28.5 m^3/s
  - ○ From specs, 342 m^3/min
  - ○ 342/60 = 5.7
  - ○ 5.7*5=28.5

Other point sources
- Source ID: STCK1-5
  - ○ EmGens 1-5
- X-Coordinate: 524036.4 m (constant)
- Y-Coordinate: 4245812.86, 4245806.86, 4245809.86, 4245815.86, 4245818.86 [m]
  - ○ In order from 1 to 5
  - ○ Spaced them 3 m apart, with STCK1 in the position of the STCKALL
- Release Height: 15.67 ft
  - ○ 188.02 inches (Sheila emailed)
- Base Elevation: 27.0 m
  - ○ For location: 38.360393, -122.724930
  - ○ From https://www.freemaptools.com/elevation-finder.htm
- Release Type: Vertical
- Emission Rate: 0.151 lb/hr
  - ○ 1500*8/453.59 = 26.4556 lb/hr (from Graton Calculations spreadsheet)
  - ○ 26.4556*50/8760 = 0.151 lb/hr
    - Scaling for 50 hours of operation per year instead of 8760
- ~~Emission Rate: 0.0669 lb/hr~~
  - ○ ~~0.005753953821*2038=11.726557887198 lb/hr~~
    - ~~0.005753953821 lb/hp-hr, 2038 hp (from Graton Calculations spreadsheet)~~
  - ○ ~~11.726557887198*50/8760=0.066932408032 lb/hr~~
    - ~~Scaling for 50 hours of operation per year instead of 8760~~
- Fixed
- Gas Exit Temperature: 435 C
  - ○ From specs, 435 C
- Stack Inside Diameter: 1.1667 ft
  - ○ 14 inch diameter
  - ○ 14/12 = 1.1667
- Gas Exit Velocity: 57.391 m/s
  - ○ autopopulated
- Gas Exit Flow Rate: 28.5 m^3/s
  - ○ From specs, 342 m^3/min
  - ○ 342/60 = 5.7

Initial Baseline Source Scenario Inputs (All):
- Dispersion: Urban
- Population 42900
  - Google Search for Rohnert Park Popuation
- No Debug File
- Pollutant Emission Rate:
  - ~~0.3347~~ 0.755 lb/hr NO2 (with Chemistry)
    - OLM
    - In-Stack NO2/NOx Ratio: 0.5
    - Ozone Concentration: 69.0 ppb
- Downwash: Include all Buildings (CASINO, YARD)
  - Note that checkmark is on CASINO but that shouldn't matter
- Meteorology Parameters
  - Min Temp: -9.67 F
    - Default value = 250 K
  - Max Temp: 115 F
    - Google search for highest recorded temp rohnert park, ca showed 113 F, with cloverdale at 115
  - Min Wind Speed: 0.5 m/s
  - Anemometer Height: 10.0 m
  - Do NOT adjust friction velocity
- Surface Characteristics:
  - Albedo: 0.29
  - Bowen Ratio: 0.925
  - Surface Roughness: 0.0403
- NO AERMET Seasonal Tables
- NO External File
- Include Terrain Effects and Force AERMAP Re-Run
  - Map Type: USGS DEM/CDED
  - The following autopopulated and I left them alone
    - SW Corner: (521527.32, 4243218.52)
    - Height: 5366.0
    - Width: 5120.32
    - Mesh Size: 40
- Source Base Elevation: AERMAP Calculated
- NO Flagpole Receptors
- Minimum Distance to Ambient Air: 9.14 m
- Maximum Distance of Downwind Receptors (Probe Distance): 2.0 km
- NO Additional Receptors
- Do NOT apply inverse break-up fumigation
- Do NOT apply shoreline fumigation