Salton Sea Long-Range Plan

Appendix E: Air Quality Evaluation

March 2024

SALTON SEA MANAGEMENT PROGRAM

CALIFORNIA NATURAL RESOURCES AGENCY

DEPARTMENT OF WATER RESOURCES · STATE OF CALIFORNIA

CALIFORNIA DEPARTMENT OF FISH & WILDLIFE

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Acronyms

AQI	Air Quality Index
EPA	Environmental Protection Agency
km	kilometer
LCC	Lambert Conformal Conic
LRP	Long-Range Plan
MMIF	Mesoscale Model Interface
$\mu g/m^3$	Microgram per cubic meter
PM_{10}	Concentration of particulate matter with diameter less than 10 micrometers
SSMP	Salton Sea Management Program
WRF	Weather Research and Forecasting

Appendix E: Air Quality Evaluation

1.1. Introduction

The Salton Sea Management Program (SSMP) prepared a draft Long-Range Plan (Plan) to comply with the State of California Water Board Revised Order WR 2002-0013 (Order). The Plan must be consistent with the requirements of the Order and the Salton Sea Restoration Act (Act) (Fish and Game Code § 2930, et seq.), including the statutory restoration objectives set forth in Fish and Game Code Section 2931, subdivision (c).

The Plan is being developed as a second phase to the Phase 1: 10-year Plan projects, which will establish at least 14,900 acres of aquatic habitat and up to 14,900 acres of vegetated habitat by the year 2028, with the purpose of suppressing dust emissions and improving ecological conditions at the Salton Sea. One of the goals of the Plan is to protect or improve air quality to prevent or reduce health and environmental consequences anticipated from the long-term recession of the Salton Sea.

This air quality analysis establishes a baseline of air emission estimates from the existing exposed lakebed and predicted ambient air concentrations of particulate matter in the vicinity of the Salton Sea. The CALPUFF dispersion model was used to perform the analysis. The focus of this baseline analysis is to demonstrate that dispersion modeling can be a useful tool in understanding the meteorological conditions that can lead to elevated predicted concentrations and the potential transport of emissions to communities in the region. This modeling indicates that exposed lakebed emissions alone can produce the level of elevated concentrations being measured in the basin, and consequently fugitive dust control efforts can have meaningful benefit. Further modeling will be performed to address future recession of the Salton Sea and the resulting increased exposure of exposed lakebed to wind erosion as well as address mitigation strategies proposed in the Plan.

The emission estimation procedures are detailed in Section 2.0. The modeling methodology is described in detail in Section 3.0 and a discussion of the baseline predicted impacts is presented in Section 4.0 of this memo.

1.2. Dispersion Modeling Methodology

1.2.1. Model Selection

CALPUFF is a Lagrangian modeling system that can address complex wind situations over a large domain. The model is useful as a screening technique for long-range transport of air emissions and for addressing dispersion of air emissions in complex non-steady state meteorological conditions. In rugged hilly or mountainous terrain, along coastlines, or near large variations in land use, the characterization of the winds is a balance of various forces, such that the assumption of steady-state straight-line transport both in time and space used by other dispersion models (such as AERMOD) are inappropriate.

CALPUFF is a multi-layer, multi-species non-steady-state puff model that simulates the effects of time- and space-varying meteorological conditions on pollution transport, transformation, dispersion, and removal through the treatment of air pollutant emissions from sources released as a series of discrete puffs. Each puff is tracked individually by the model until it leaves the modeling domain, and the contribution of each puff to receptor concentrations (or deposition fluxes) is calculated separately and can be used to create individual source impacts or summed to create total impacts over source groups based on the user's selections. CALPUFF uses three-dimensional meteorological fields developed by the CALMET model based on prognostic meteorological model output (e.g., Weather Research and Forecasting model, or WRF), station meteorological data (surface observations and upper air soundings), or a combination of both (hybrid mode). CALPUFF can be applied on scales of tens to hundreds of kilometers. It includes algorithms for subgrid scale effects (such as terrain impingement), as well as longer range effects (such as pollutant removal due to wet scavenging and dry deposition, chemical transformation, and visibility effects of particulate matter concentrations). CALPUFF is well suited for situations involving complex flows including spatial changes in meteorological fields due to factors such as the presence of complex terrain or the influence of water bodies. CALPUFF can assess plume fumigation (coastal fumigation or inversion break-up conditions), light wind speed or calm wind impacts, or other factors for which a steady-state-straight-line modeling approach is not appropriate. CALPUFF can account for the cumulative impact of multiple spatially distributed sources with temporally varying emissions within a large region.

CALPUFF View is a CALPUFF model graphical user interface (GUI) developed and maintained by Lakes Environmental (Ontario, Canada). The software combines the various CALPUFF pre- and post-processing programs, providing a user-friendly model setup wizard interface and other tools and creates a graphical display of the various model inputs and outputs for visualization and QA/QC. CALPUFF View allows for visualization of plume predicted concentrations and wind fields, thereby enabling conclusions to be drawn regarding the meteorological conditions that lead to plume formation, transport, and elevated ambient air concentrations.

Wind fields in the Salton Sea basin are influenced by non-uniform land cover (i.e., desert, exposed lakebed, sea surface) and mountainous terrain to the west and northeast. These geographical variations tend to modify the prevailing winds, generating local winds and circulations that influence the transport of fugitive dust emissions. The CALPUFF model can simulate the dispersion from many spatially distributed sources with hourly varying emissions (as described in Section 2.0). For these reasons the CALPUFF modeling system is appropriate for use in this assessment.

1.2.2. Meteorology

The modeling used prognostic data derived from the Weather Research and Forecasting (WRF) model and processed with EPA's Mesoscale Model Interface (MMIF) program to generate CALPUFF model-ready meteorological parameters. The gridded WRF-derived multi-level meteorological data for the one-year period of 2020 was purchased from Lakes Environmental. Lakes Environmental ran the WRF model for the 100 kilometer (km) by 100 km domain with 1 km horizontal resolution. Lakes Environmental prepared the files using MMIF to convert the prognostic meteorological model output fields to the parameters and formats required for direct input into CALPUFF. To account for the curvature of the earth, Lambert Conformal Conic (LCC) projection coordinates were used for the MMIF extractions. The meteorological grid was defined with ten vertical layers, as consistent with the default layers specified by EPA/Federal Land Manager (FLM) guidance (cell face heights of 20, 40, 80, 160, 320, 640, 1200, 2000, 3000 and 4000 meters). Table 1 summarizes the input parameters for the MMIF extraction. Due to the size of the meteorological data files, the one-year period is comprised of 12 monthly files.

Table 1. Meteorological Domain MMIF Extraction Parameterizations

Domain Parameter	Setting
Projection	Lambert Conformal Conic
XBTZ (Base Time Zone)	-8
Projection origin (RLAT0, RLON0)	33.308 N, 115.837 W
Parallels of Latitude for Projection (XLAT, XLAT2)	32.808 N, 33.808 N
False Easting, Northing at Projection Origin	0 km, 0 km
Datum	NWS-84 (NWS 6370 km radius, sphere)
Number of Grid Cells	nx = 100, ny = 100
Grid Spacing	1.0 km
Number of Vertical Levels	10
Cell Face Heights (ZFACE)	0, 20, 40, 80, 160, 320, 640, 1200, 2000, 3000, 4000 m
Southwest Corner of Grid Origin (1,1)	-50.0 km, -50.0 km

1.2.3. Model Domain

The CALPUFF modeling domain was inherently defined by the domain of the meteorological data extraction (100 km by 100 km, centered at approximately 33.308416°N, 115.836615°W) which encompasses the Salton Sea and sufficient surrounding topography. The CALPUFF domain is shown in Figure 1. The LCC projection coordinates are used to define source and receptor locations in CALPUFF.

1.2.4. Receptors

Receptors are geographic locations at which the model predicts ambient air concentrations. For this modeling analysis, receptors were located in the following communities: Bombay Beach, Brawley, Calipatria, Desert Camp, Desert Shores, Mecca, Mortmar, Niland, North Shore, Salton City, Salton Sea Beach, Torres Martinez, and Westmorland. Grids of receptors were developed to cover each community with uniform spacing ranging from 150 meters to 400 meters depending on the size of the area covered by the community. Salton City covers a large area, therefore three receptor grids of 400 m spacing each were developed to provide adequate coverage. In addition to the community receptors, a grid of receptors extending throughout the modeling domain with 2 km spacing was modeled. A total of 3,185 receptors were included in the modeling analysis. The CALPUFF receptor locations are shown in Figure 2. The blue symbols in the figure are community receptors and the green symbols are gridded receptors.

Figure 1. CALPUFF Model Domain

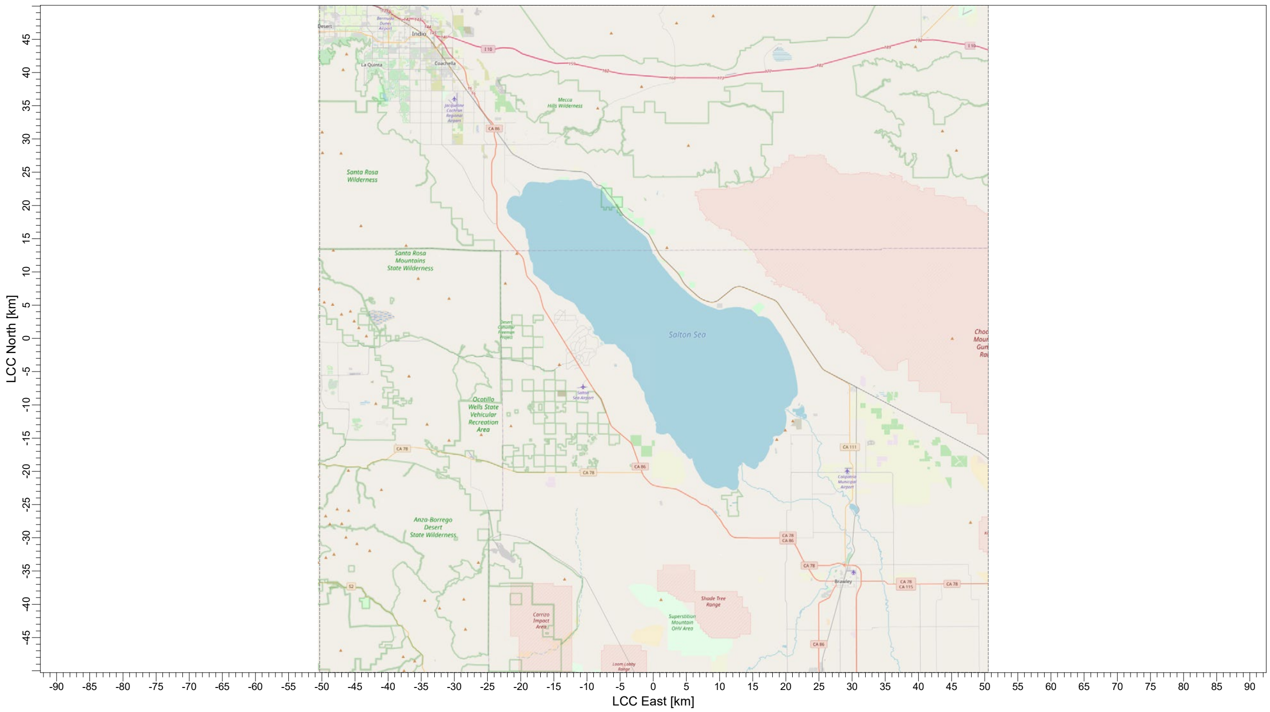
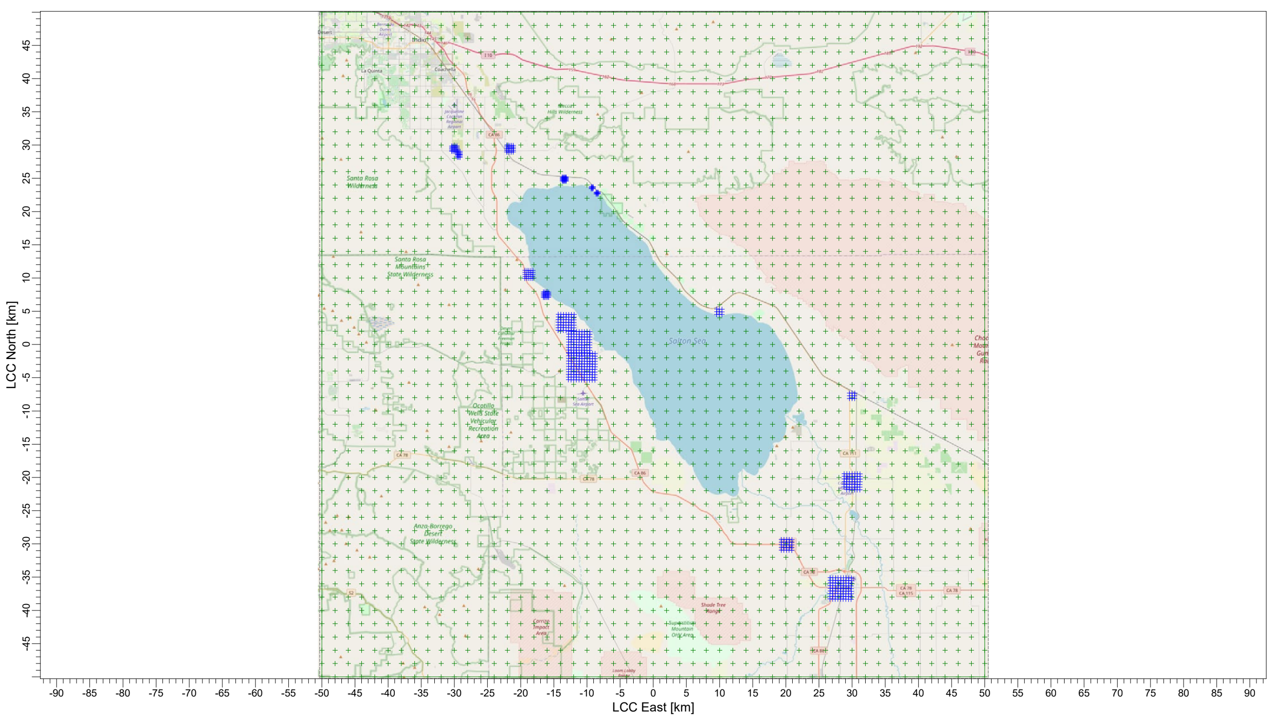


Figure 2. CALPUFF Receptor Locations



CALPUFF's terrain preprocessor program, TERREL, was used to calculate terrain elevations and critical hill heights for each model receptor using National Elevation Data (NED). The 1/3 arc-second (~10-meter resolution) NED dataset was downloaded from the United States Geological Service (USGS) website using the CALPUFF View GUI.

1.2.5. CALPUFF Model Options

CALPUFF was run with the default technical options selected that conform to the EPA guidance (MREG =1), except that chemical transformation was not incorporated for modeling particulate matter with aerodynamic diameter less than or equal to 10 microns (PM_{10}). Hourly emissions of PM_{10} were calculated and input to CALPUFF (see Section 3) and both dry and wet deposition were considered by applying CALPUFF's default depositional parameters.

1.3. Emission Rate Estimation Procedures

Using ArcGIS, each of the 1 km by 1 km grid cells in the modeling domain were intersected with a layer defining the geographic extent of the current exposed lakebed, thereby assigning the proportion of exposed lakebed within each grid cell. Emission rates assigned to each grid cell were then calculated based on the land cover represented within the boundary of the grid cell. Much of the basis for the emissions calculations were obtained from the Salton Sea Emissions Monitoring Program, 2020/2021 Annual Report (Formation Environmental, 2022). Land cover factors for consideration included the surface type (dry exposed lakebed, moist [wet] exposed lakebed, and desert), sand presence, exposed lakebed crust types, and surface roughness. Threshold friction velocity, which is a measure of the wind speed above which fugitive dust is generated, is a function of these land cover factors and was identified from rulesets available in the annual report. Fugitive dust emission rates were then calculated for each hour of 2020 for each grid cell based on exposed lakebed crust type and on the hourly wind speed data extracted from the meteorological data described above.

The annual report presents ruleset charts that provide relationships between PM_{10} fluxes and surface friction velocity for exposed lakebed surface types. The ruleset charts are reproduced and presented here as Figure 3. The curves presented in these charts were used to establish the threshold friction velocity for each land cover combination and to derive PM_{10} emission rate equations for each land cover combination. Three different curves are presented on each chart, each representing the 25th, 50th, and 75th percentiles of each underlying data set. For the purposes of this evaluation, the 50th percentile curves were used to establish the threshold friction velocity and to calculate the PM_{10} emission rate.

The following attributes of land cover factors were selected to establish friction velocities for each of the exposed lakebed surface types:

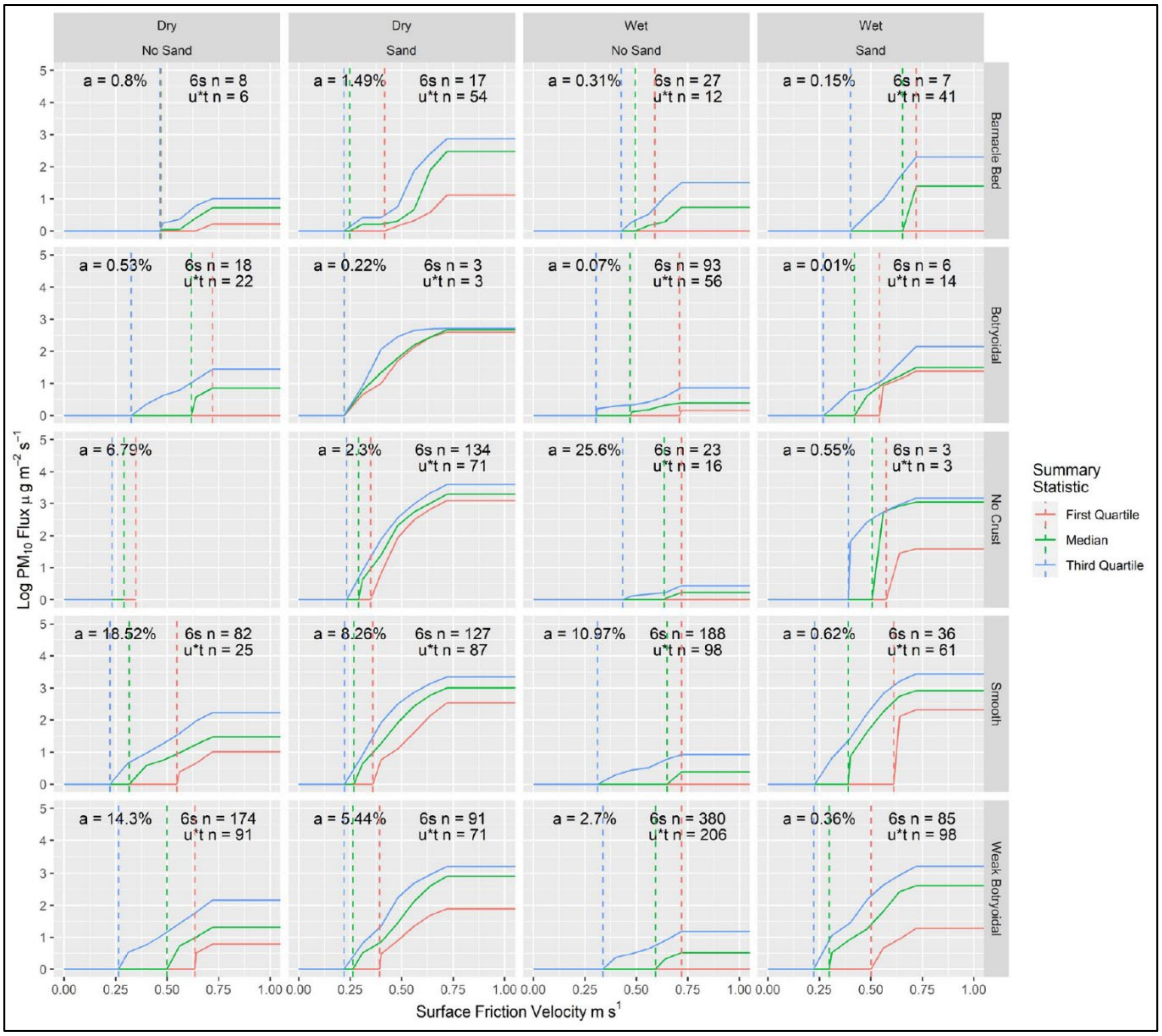
- A surface roughness of 0.0001 meter was assigned to all exposed lakebed coverage;
- Dry exposed lakebed was assumed for all exposed lakebed coverage as the proportion of dry exposed lakebed over time as the sea recedes will increase;
- Two surficial sand presence coverages of the exposed lakebed, 80 percent and 20 percent, were considered to perform a sensitivity analysis; and
- Using ArcGIS, detailed crust type coverages (i.e., barnacle bed, botryoidal, weak botryoidal, smooth crust, and no crust) were intersected with the grid cells to assign the proportion of crust type within each grid cell.

The PM_{10} emission rate was calculated from linear relationships established over discrete ranges of surface friction velocity. These linear relationships have the form:

$$\log(Q) = m \times u^* + b$$

Where Q is the PM_{10} emission rate, u* is the surface friction velocity, m is the slope of the line, and b is the intercept of the line. These discrete linear relationships were derived by digitizing each of the ruleset charts. The surface friction velocity was computed for each hour of wind speed data in each grid cell over the 1-year period of the meteorological record. For hours when the wind speed was less than the threshold wind velocity, a zero emission rate was assigned to the crust type coverage of the grid cell.

Figure 3. PM_{10} Emissions Ruleset for Exposed Lakebed (from Formation Environmental, 2022)



The surface friction velocity was calculated for each hour and each grid cell from the above-described wind speed data and surface roughness as follows:

$$u^* = (0.4 \times u) / \ln(10/z_o)$$

where u* is the friction velocity, u is the wind speed, and z_o is the surface roughness.

Finally, the PM_{10} emission rate assigned to each grid cell was based on the proportion of surface type present within the boundary of the grid cell. For grid cells comprised entirely of a single surface type, the assigned emission rate is based solely on the calculation parameters for that surface type. For grid cells containing multiple surface types, the assigned emission rate is based on the weighted fraction of the surface type present within the grid cell as determined by GIS analysis. The resulting surface friction velocities were used to perform the emission rate calculation.

The emission source locations and the calculated annual emissions for each grid cell are shown in Figures 4a and 4b for the 80 percent and 20 percent sand presence cases, respectively. The figures show that emissivity is greatest in the southeastern, southwestern, and western areas of exposed lakebed, and lowest in the northern and eastern areas of exposed lakebed. These results are consistent with information presented in the 2021 Salton Sea Annual Report.

Figure 4a. CALPUFF Emissions Source Locations Showing Calculated 2020 Total Emissions, 80% Sand Presence

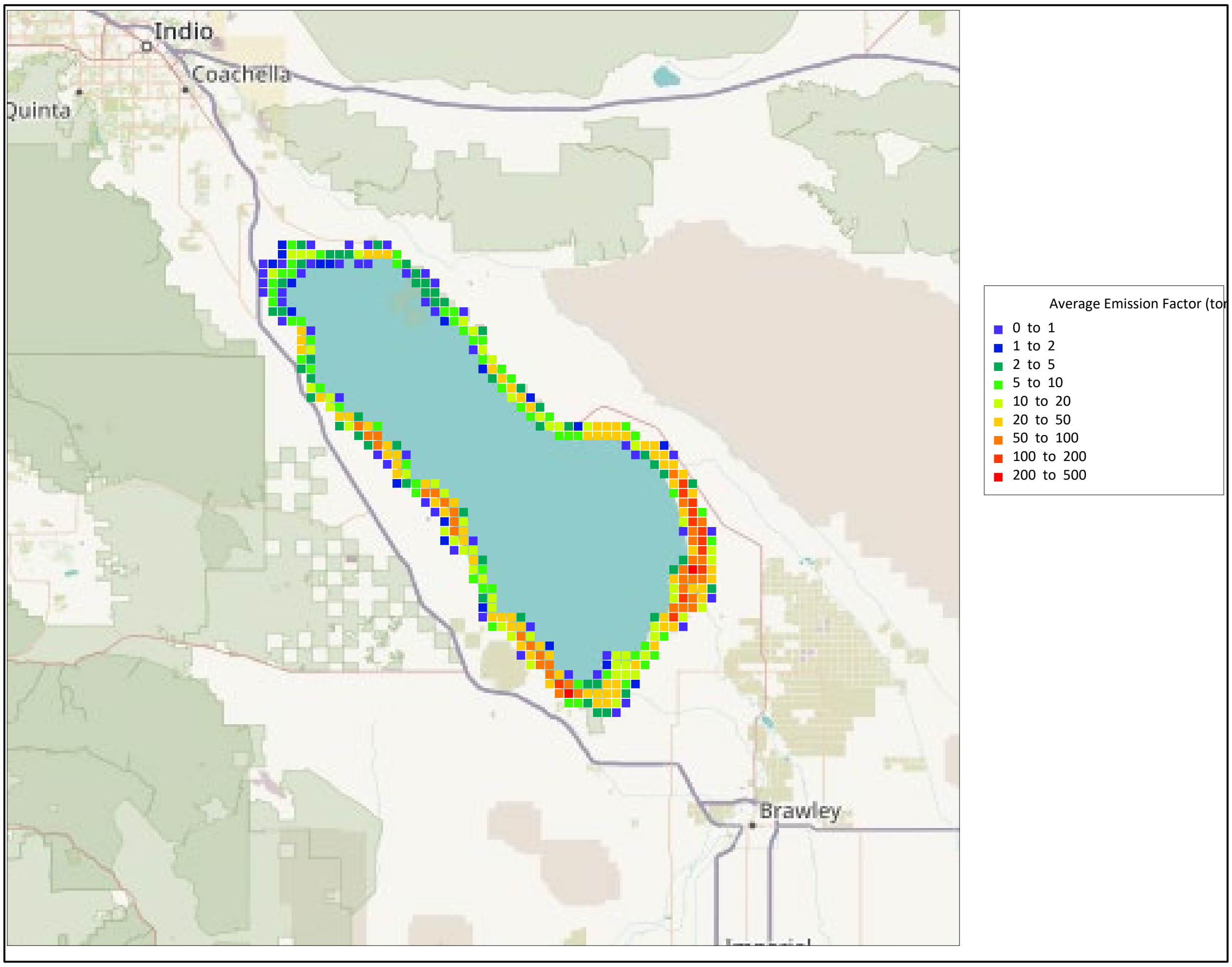
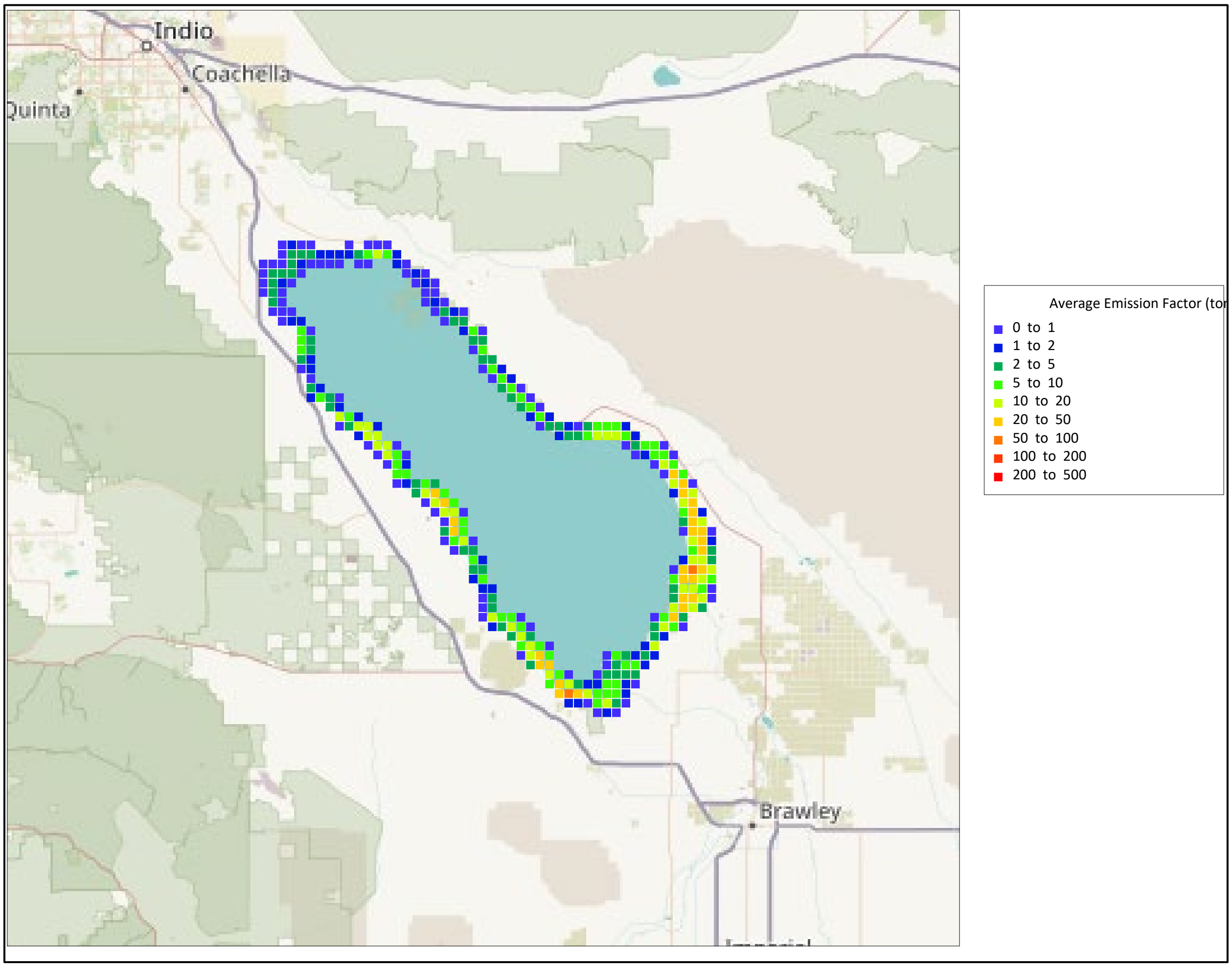


Figure 4b. CALPUFF Emissions Source Locations Showing Calculated 2020 Total Emissions, 20% Sand Presence



1.4. Evaluation of Model Predictions

CALPUFF modeling was conducted for a full year (2020) of meteorological data with emission rates based on 80% sand presence on the exposed lakebed surface. The results for the annual run were evaluated to identify discrete episodes when elevated 1-hour average ambient PM_{10} concentrations (i.e., greater than 200 µg/m^3) were predicted. These predicted episodes were compared to ambient monitoring measurements to assess whether elevated 1-hour average ambient PM_{10} concentrations were measured during the same time periods.

Selecting discrete episodes for further evaluation is consistent with the strategy of performing modeling for ozone and $PM_{2.5}$ attainment demonstrations by state and local air quality management agencies. The strategy is to identify episodes with high predicted ambient concentrations, compare those to actual observations to have assurance that the modeled episode is representative of the actual observed episode, and then apply mitigation measures to the modeled emissions inputs to identify the effectiveness of the mitigation measure in reducing ambient air impacts. Because the magnitude of fugitive dust emissions in the Salton Sea Basin are a product of elevated wind speeds, the emissions are highly variable over time and do not occur on days when the wind speed is insufficient to erode the exposed lakebed surface. Evaluation of the effectiveness of mitigation measures cannot be performed on days when emissions do not occur, and therefore episode selection is the most efficient means of focusing the labor and computational resources to perform the evaluation.

Episodes of elevated predicted 1-hour average ambient air concentrations corresponding to days were identified and then re-run with a second set of emission rates developed assuming 20% sand presence on the exposed lakebed surface. The following episodes were modeled:

- January 27 through January 30, with January 29 being the particular day of interest;
- February 28 through March 4, with March 1 being the particular day of interest;
- June 3 through June 8, with June 5 being the particular day of interest;
- June 28 through July 1, with June 30 being the particular day of interest;
- October 24 through October 27, with October 26 being the particular day of interest; and
- November 5 through November 9, with November 7 being the particular day of interest.

It is notable that elevated 1-hour average ambient PM_{10} concentrations were measured during these days at one or more of the six monitoring sites located around the Salton Sea. Thus, the methodology described above predicted elevated 1-hour average ambient PM_{10} concentrations to occur on days when elevated 1-hour average ambient PM_{10} concentrations were actually observed. This result is one indicator that the modeling approach is a useful tool for evaluating ambient air quality impacts associated with future exposed lakebed conditions and mitigation strategies.

Isopleths of predicted 1-hour average ambient PM_{10} concentration were plotted with corresponding wind field vectors for each hour of the episodes identified above. These isopleths were examined to determine if predicted elevated 1-hour average ambient PM_{10} concentration could be consistently attributed to specific wind field characteristics. The isopleths consistently show that predicted elevated 1-hour average ambient PM_{10} concentration are associated with localized areas of stagnating winds that are in turn located adjacent to areas of stronger winds capable of producing fugitive dust emissions and with the wind direction oriented in a way that can transport the fugitive dust into the area of stagnating wind. Preceding hours also consistently show stronger winds capable of producing fugitive dust emissions in these areas.

As described above, CALPUFF treats air emissions from sources as a series of discrete puffs released on a nearly continuous basis. Each puff is individually transported and dispersed through the modeling domain and the predicted concentration of each puff at each receptor is calculated separately. Those individual puff results are then summed for all puffs to produce the total predicted concentration at each receptor. This treatment provides a representative simulation of actual plume transport and dispersion in a way that is not provided by steady-state straight-line dispersion models such as AERMOD. In the meteorological case described above that leads to predicted elevated 1-hour average ambient PM_{10} concentration, the transport of the simulated puffs is slowed due to the reduced wind speed and the dispersion of the simulated puffs is reduced due to the reduced turbulence in the areas where light or calm winds occur. Thus, CALPUFF allows puffs to accumulate in these localized areas of stagnant winds and as such the model provides a meteorological explanation for elevated ambient air concentrations that goes beyond a simplistic attribution of elevated wind speeds. Such meteorological explanations are not readily identified by the ambient monitoring data alone, which generally show that elevated ambient air concentrations can occur across the spectrum of concurrent high and low wind speeds. This finding is another indicator that the modeling approach is a useful tool for evaluating ambient air quality impacts associated with future exposed lakebed conditions and mitigation strategies.

Review of the isopleths for the full-year CALPUFF run indicate that persistent durations of predicted elevated 1-hour average ambient PM_{10} concentration are associated with winds blowing from the northwest to the southeast along the axis of orientation of the Salton Sea and with winds blowing from west to east across the Salton Sea. The modeling indicates that episodes are infrequently occurring where fugitive dust emissions from exposed lakebed are being transported to communities north of the Salton Sea. Rather, transport of fugitive dust emissions from exposed lakebed toward the communities south of the Salton Sea are much more likely. This observation is not only associated with the wind vectors occurring on episode days, but also with the relatively high emissivity of the exposed lakebed in the southern and western regions of the Salton Sea. It is notable, however, that the predicted concentrations in the communities south and north of the Salton Sea are considerably lower than those predicted along the seashore itself and no exceedances of ambient air quality standards in these communities is predicted by CALPUFF for the communities.

As described above, two sets of emissions were developed to assess the sensitivity of the modeling results to the amount of sand present on the exposed lakebed surface. A comparison of the CALPUFF-predicted maximum 1-hour average PM_{10} concentrations for each set shows that the results are sensitive to the assumption of how much sand is present on the exposed lakebed surface. In general, predicted ambient air concentrations based on 80% sand presence were a factor of 3 to 4 greater than predicted ambient air concentrations based on 20% sand presence. The ratio of these results is consistent with the emissions ratio described above and provides context for the uncertainty of the numeric value of the results. Nevertheless, the order of magnitude of the values of the maximum predicted 1-hour average concentrations are consistent with those measured at the six monitoring sites located around the Salton Sea (i.e., greater than 1,000 $\mu g/m^3$). This order-of-magnitude result is another indicator that the modeling approach is a useful tool for evaluating ambient air quality impacts associated with future exposed lakebed conditions and mitigation strategies, while the uncertainty assessment informs the treatment of surficial exposed lakebed sand in future modeling assessments.

As noted in the description of the methodology for developing the emissions inputs to CALPUFF, fugitive dust contributions from the desert are not included in the modeling assessment. Thus, the results presented in this report should not be construed to mean that elevated 1-hour average ambient PM_{10} concentrations are attributable solely to exposed lakebed sources. Work performed by others demonstrates the contribution of desert sources are significant to elevated ambient PM_{10} concentrations. Nevertheless, the predicted concentrations presented in this report are representative of ambient measurements in the domain, and therefore the modeling indicates that exposed lakebed emissions alone can sometimes lead to the level of elevated concentrations being measured in the basin and even to a level where ambient air quality standards can be exceeded. This indicates that fugitive dust control efforts in the areas of exposed lakebed can have meaningful benefit and further indicates that the modeling approach is a useful tool for evaluating ambient air quality impacts associated with future exposed lakebed conditions and mitigation strategies.

Attachment A presents isopleth plots for maximum 1-hour average PM_{10} concentrations with corresponding wind field vectors for each of the six above-listed episode dates and provides examples of the above-described meteorological conditions. In summary, the following findings resulted from the assessment of baseline exposed lakebed conditions:

- For the selected episodes, predicted elevated 1-hour average ambient PM_{10} concentrations occurred on days when measured elevated 1-hour average ambient PM_{10} concentrations were observed.
- Isopleths of predicted elevated 1-hour average ambient PM_{10} concentration are consistently associated with localized areas of stagnating winds that are in turn located adjacent to areas of stronger winds capable of producing fugitive dust emissions and with the wind direction oriented in a way that can transport the fugitive dust into the area of stagnating wind; further, preceding hours also consistently show stronger winds capable of producing fugitive dust emissions in these areas which can become entrained in areas of stagnating winds that forming in subsequent hours.
- Acquisition of the WRF meteorological data set for 2020 was instrumental in understanding meteorological conditions under which elevated PM_{10} concentrations can occur. The monitoring data alone from the six monitoring stations shows that elevated PM_{10} concentrations do frequently occur during light winds, but the monitoring data do not provide insight into how elevated PM_{10} concentrations can occur during light winds. The WRF meteorological data input to the CALPUFF model provided a means for obtaining the insight.
- The order of magnitude of the values of the maximum predicted 1-hour average concentrations are consistent with those measured at the six monitoring sites located around the Salton Sea (i.e., greater than 1,000 $\mu g/m^3$) and therefore the modeling indicates that exposed lakebed emissions alone can sometimes lead to the level of elevated concentrations being measured in the basin. The predicted concentrations are consequential and indicate exceedances of ambient air quality standards can be due solely to exposed lakebed fugitive dust emissions.
- Elevated predicted 1-hour average concentrations are generally transported toward the east and southeast from areas of emissivity. Communities north of the Salton Sea are generally not impacted by elevated PM_{10} concentrations that are associated with fugitive dust from exposed lakebed. While transport in the direction of communities south of the Salton Sea does occur, the CALPUFF-predicted concentrations in the community areas are not sufficient to exceed ambient air quality standards. These results are consistent with the wind directions associated with episodes of elevated ambient concentrations and with the locations of elevated exposed lakebed emissivity.

Attachment B presents the results of the air quality modeling of restoration concepts, with results presented as maximum predicted 24-hour average PM_{10} concentrations ($\mu g/m^3$). These simulations were run with 80% sand and assumed no additional dust suppression on exposed lakebed for a conservative analysis. Model results for each restoration concept are shown for four episode dates in 2020 (January 29, March 1, June 30, and November 7). The results are presented in the format of baseline (Phase 1: 10-Year Plan) predicted concentrations on the left panel, and the individual concept concentration on the right panel of each page for direct comparison. For each baseline/restoration concept pair, each of the four episode dates in 2020 are presented in chronological order. As shown on the figure legends, the results are presented as maximum predicted 24-hour average PM_{10} concentration ($\mu g/m^3$) and use the color scale that corresponds to USEPA's air quality index (AQI) levels for PM_{10}. Table 2 lists the name of each restoration concept and the corresponding figure number in the main text of the LRP for reference when reviewing the findings.

Table 2. Restoration Concepts and Figure Numbers in Main LRP Document

Number	Name	Variation	Figure Number in Main LRP Document
Phase 1: 10-Year Plan	Phase 1: 10-Year Plan	-	5-1
1	North/South Marine Sea	1A: North/South Marine Sea	5-3
		1B: North/South Marine Sea without SHC	5-5
		1C: North/South Marine Sea without SHC & Alamo Project, with Freshwater Reservoir	5-6
2	Divided Sea/Marine Sea South	2A: Divided Sea/Marine Sea South	5-9
		2B: Divided Sea/Marine Sea South Without Alamo River Project	5-11
		2C: Divided Sea/Marine Sea South Without Alamo River Project, With Perimeter Lake Cells	5-12
		2D: Divided Sea/Marine Sea South Without Alamo River Project, With Perimeter Lake Cells and Freshwater Reservoir	5-13
3	Perimeter Lake	3A: Perimeter Lake	5-15
		3B: Perimeter Lake Without Alamo Project and Without Perimeter Lake Cells near Alamo River, Including a Freshwater Reservoir	5-18
4	Pump Out	4A/4C: Pump Out	5-22
		4B: Pump Out with Pipeline and No Brine Ponds	5-23
		4D: Pump Out with Freshwater Reservoir	5-24
5	Water Optimization	-	5-26
7	Water Recycling	-	5-30
11	Water Importation	-	5-33
12	Water Exchange	-	5-35
13	Colorado River Water Transfer	-	5-37

The following findings result from the assessment of restoration concept exposed lakebed conditions:

- Concept 1A is highly effective at reducing maximum predicted 24-hour average PM_{10} concentrations. Concept 1B and Concept 1C are less effective due to the reduced coverage of exposed lakebed at the southern end of the Sea.
- Concept 2A shows similar maximum predicted 24-hour average PM_{10} concentrations as the baseline scenario since the wetted footprint of each is similar. Variations 2B, 2C, and 2D show expected results compared to Concept 2A. Areas that are covered with water compared to Concept 2A show lower concentrations and areas that have exposed lakebed compared to Concept 2A show higher concentrations.
- Concept 3A shows reduction in maximum predicted 24-hour average PM_{10} concentrations at the southwest (from Tule Wash south to the SCH) and northeast (south of Bombay Beach) edges of the Sea where the perimeter lake cells cover otherwise exposed lakebed. Compared to Concept 3A, Concept 3B shows higher concentrations at the southeast edge of the lake, due to removal of the Alamo Project and perimeter lake cells in this area.
- Concept 4A (which has the same footprint as Concept 4C) shows reduction in maximum predicted 24-hour average PM_{10} concentrations on the east side of the Sea due to coverage of the exposed lakebed from brine ponds at the southern Sea. The absence of brine ponds in Concept 4B causes increase in maximum predicted 24-hour average PM_{10} concentrations at the north end of the Sea as compared to Concept 4A. The Concept 4D simulations show similar results to Concept 4A simulations, except for the June 30 event.
- Concept 5 shows reduction in maximum predicted 24-hour average PM_{10} concentrations on the east side of the Sea due to coverage of the exposed lakebed from the water optimization area at the southern Sea.
- Concept 7 shows similar maximum predicted 24-hour average PM_{10} concentrations as the baseline scenario, since the wetted footprint of each is similar, although there is some reduction in concentrations at the Sea's southeast due to the presence of brine ponds.
- Concept 11 shows similar maximum predicted 24-hour average PM_{10} concentrations as the baseline scenario, since the wetted footprint of each is similar.
- Concepts 12 and 13 have similar wetted footprints, each with a smaller residual Sea than the baseline. The simulations for these two concepts each show higher maximum predicted 24-hour average PM_{10} concentrations than the baseline for each of the four episode dates.

Overall, the CALPUFF model runs are a framework to visualize the air quality impacts from further exposure of the Salton Sea lakebed. Given the prevailing wind directions, especially during periods of high wind speed as used in the four key wind episodes, the air quality impacts are most significant in the south, east, and western regions of the Salton Sea, with limited impact in the north. These maps also identify communities where the air quality impacts are likely to be most pronounced. However, as noted above, the calculations are conservative in that they show effects without the use of additional dust suppression. Any project concept selected for future implementation will also likely consider community air impacts and use methods to minimize wind erosion from areas of exposed lakebed. Future model refinement may evaluate air quality impacts with the use of dust suppression techniques.

Attachment A
CALPUFF Predicted 1-Hour Average PM_{10} Concentration Contours of Baseline Fugitive Dust Emissions from Salton Sea Exposed Lakebed

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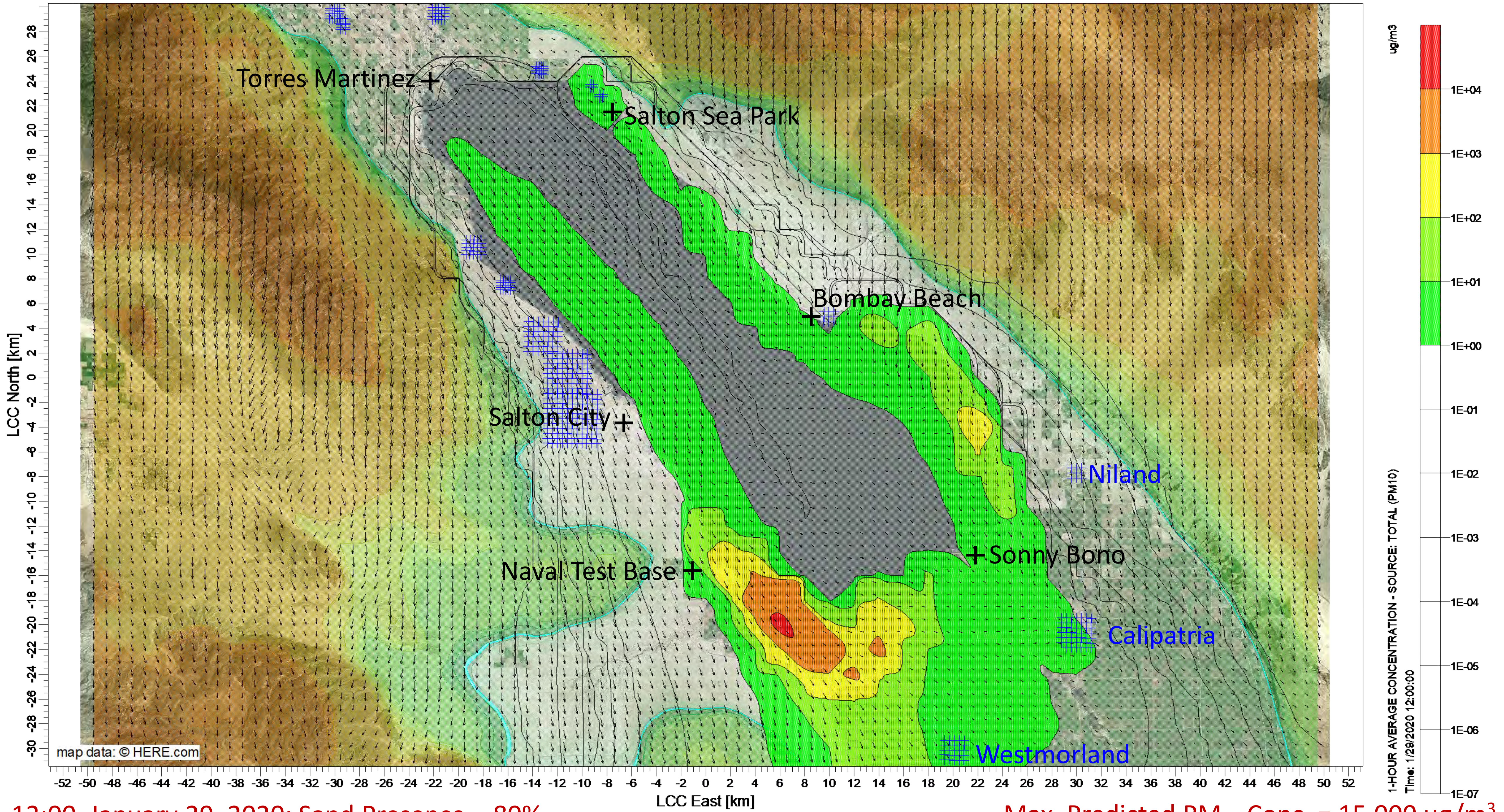
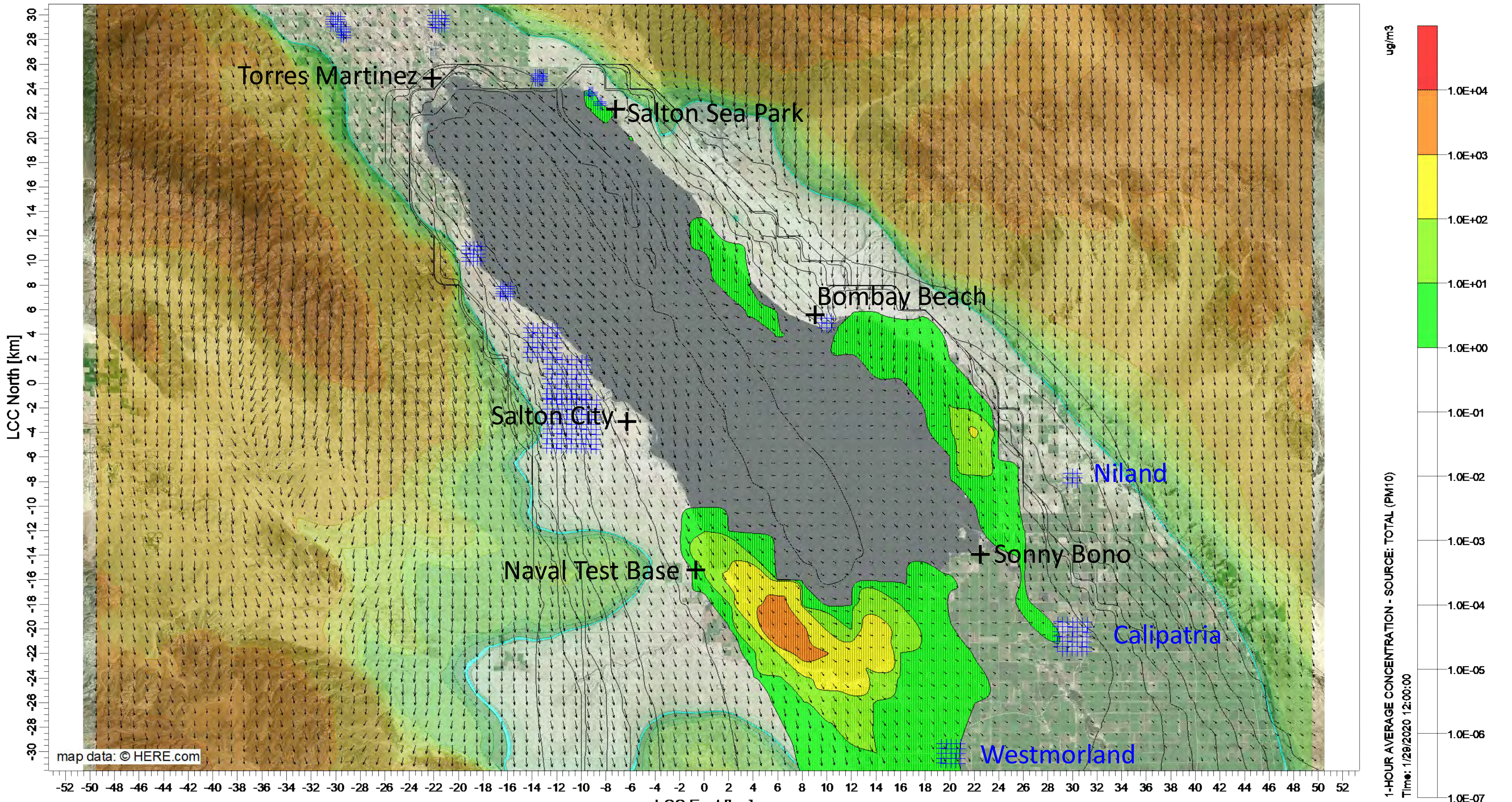
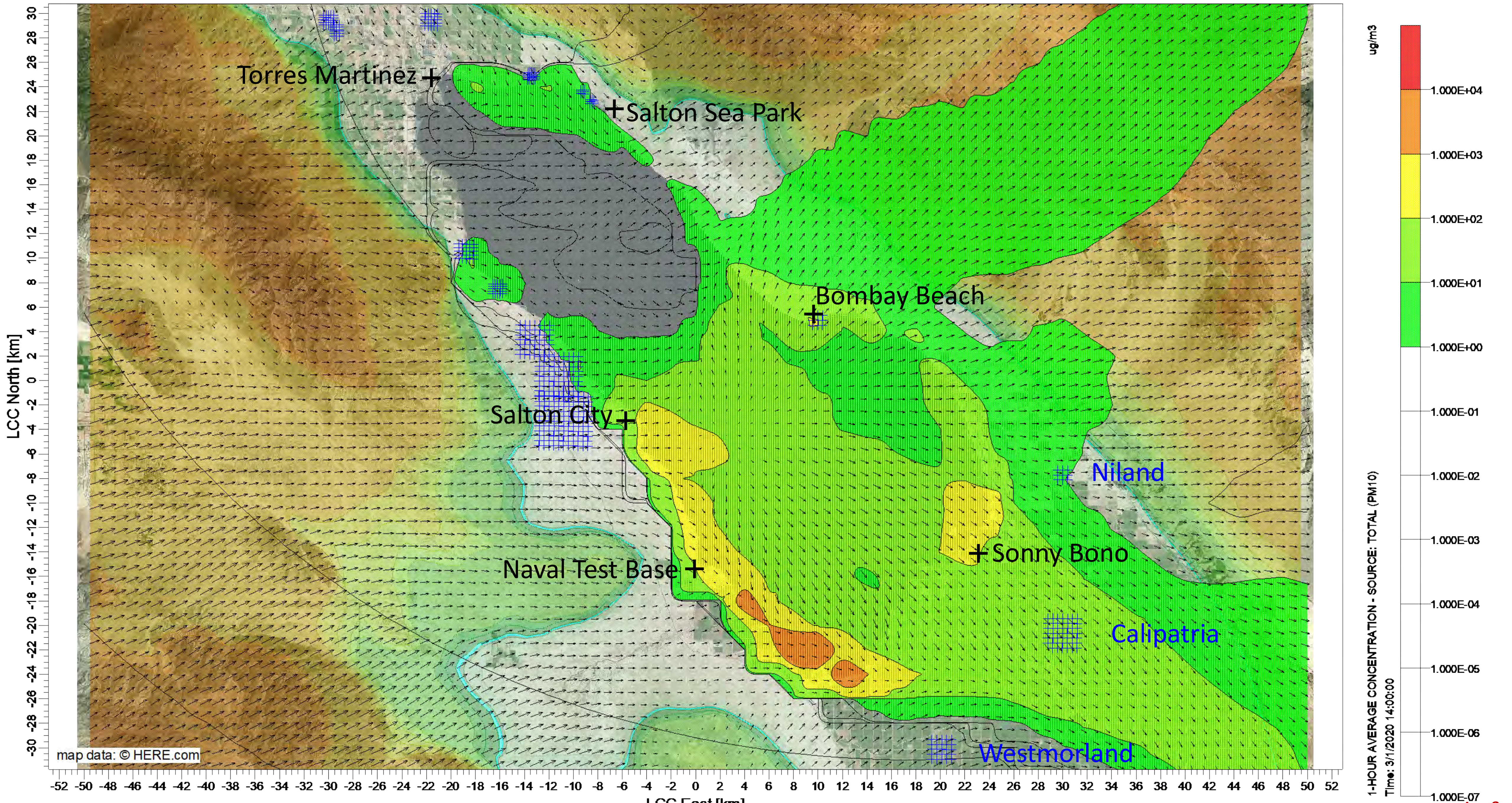


12:00, January 29, 2020; Sand Presence = 80%   Max. Predicted PM_{10} Conc. = 15,000 μg/m^3



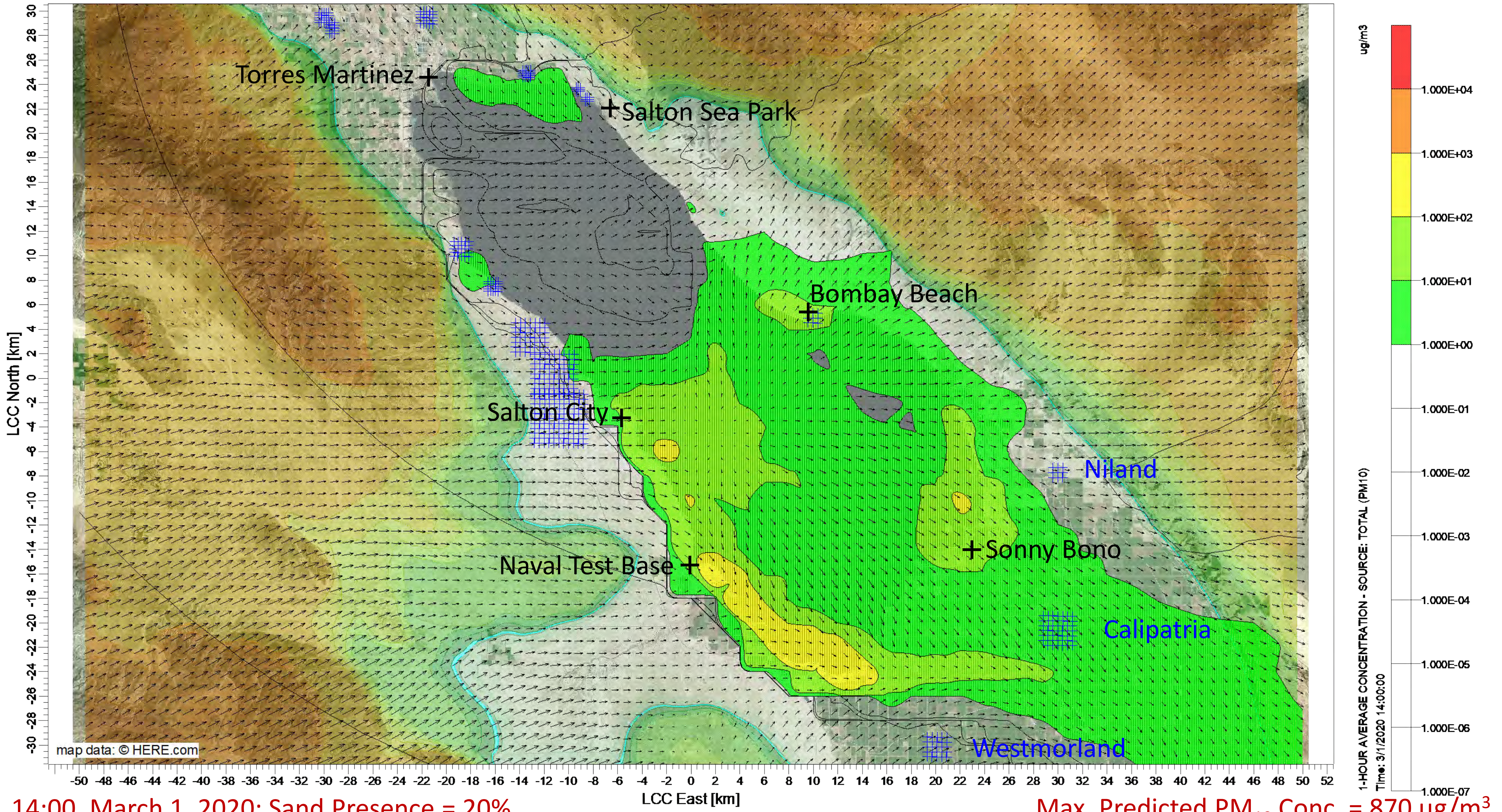
12:00, January 29, 2020; Sand Presence = 20%

Max. Predicted PM_{10} Conc. = 3,800 μg/m^3



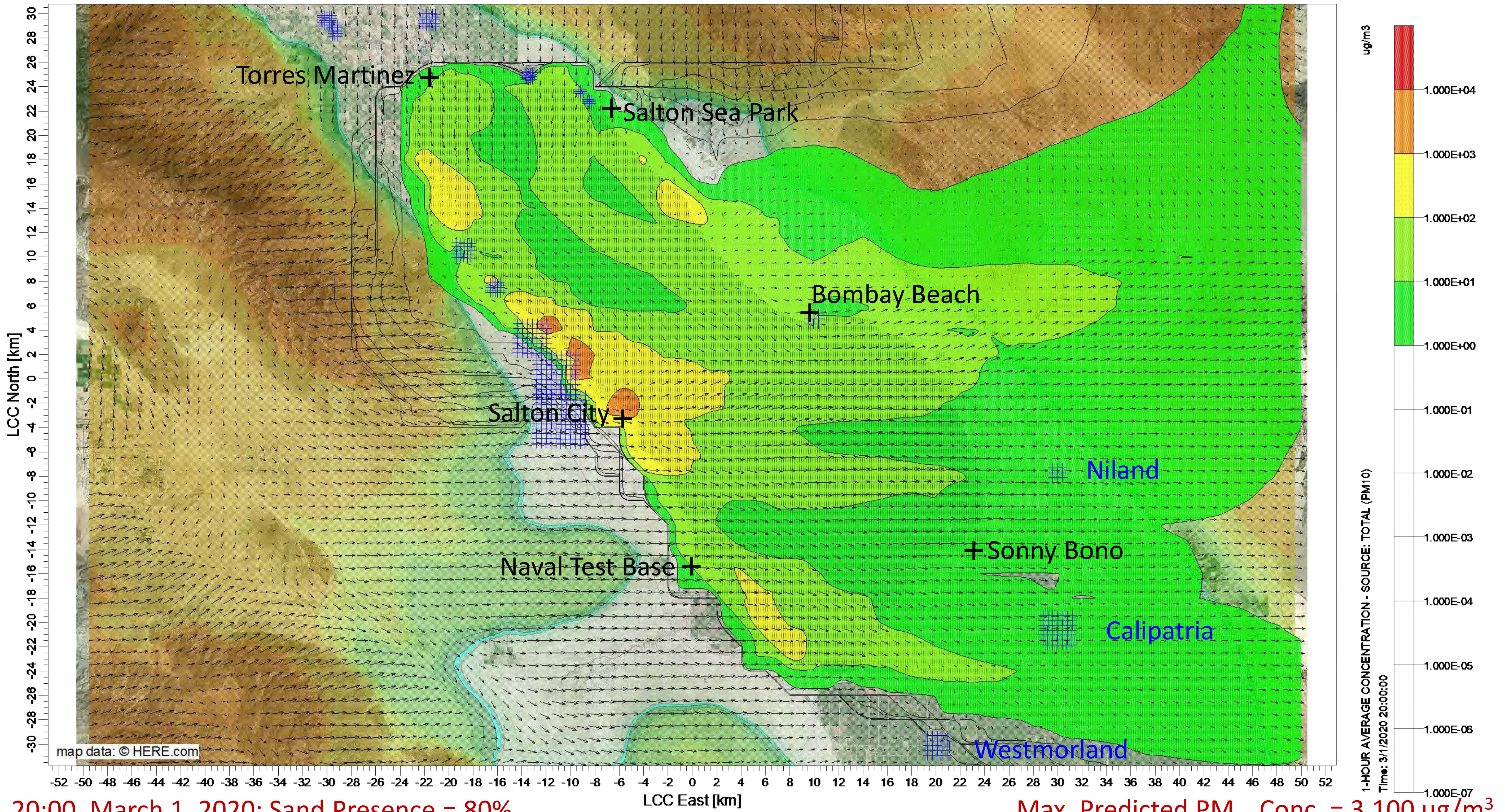
14:00, March 1, 2020; Sand Presence = 80%

Max. Predicted PM_{10} Conc. = 3,900 µg/m^3



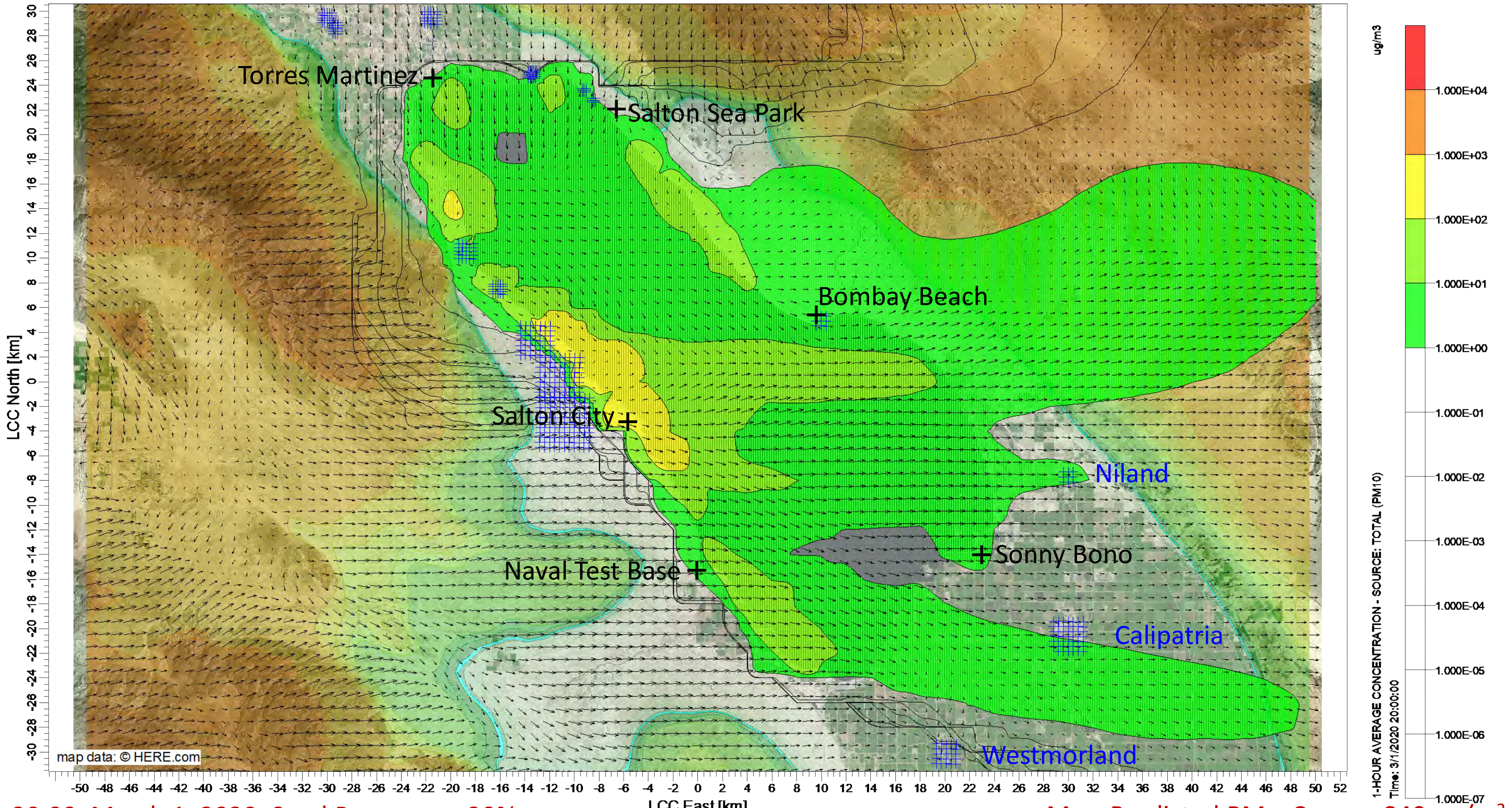
14:00, March 1, 2020; Sand Presence = 20%

Max. Predicted PM_{10} Conc. = 870 μg/m^3



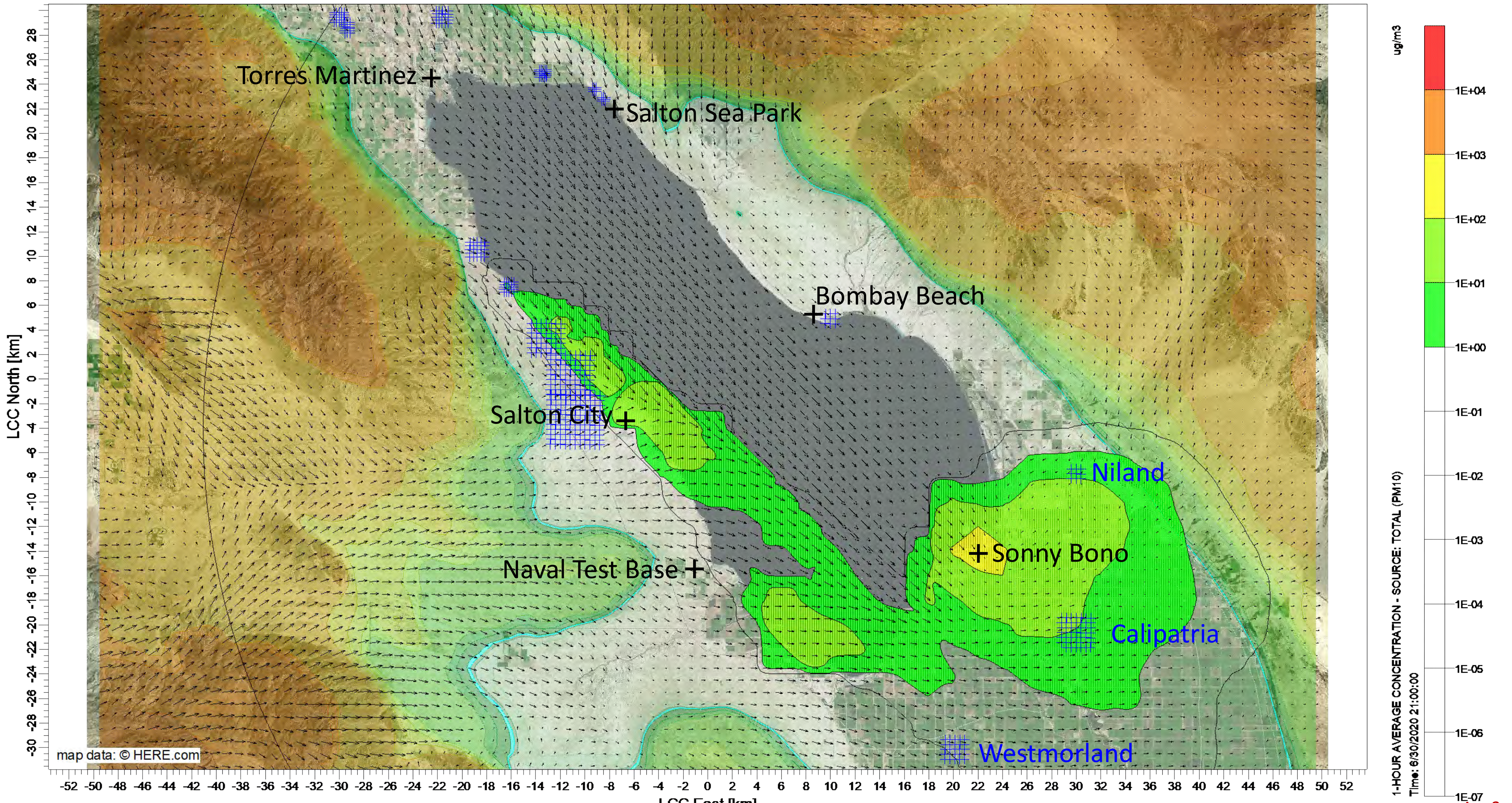
20:00, March 1, 2020; Sand Presence = 80%

Max. Predicted PM_{10} Conc. = 3,100 µg/m^3



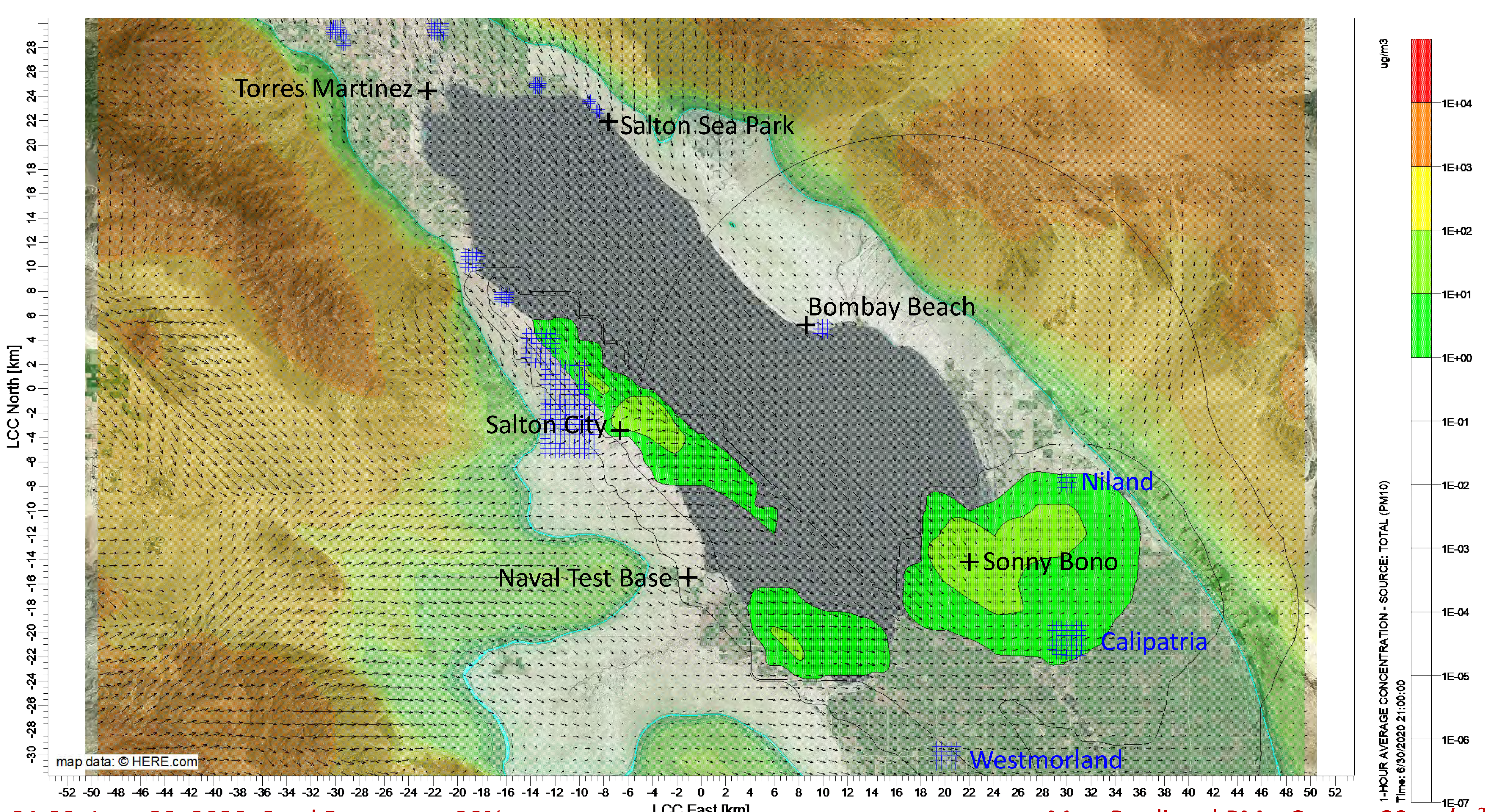
20:00, March 1, 2020; Sand Presence = 20%

Max. Predicted PM_{10} Conc. = 840 μg/m^3



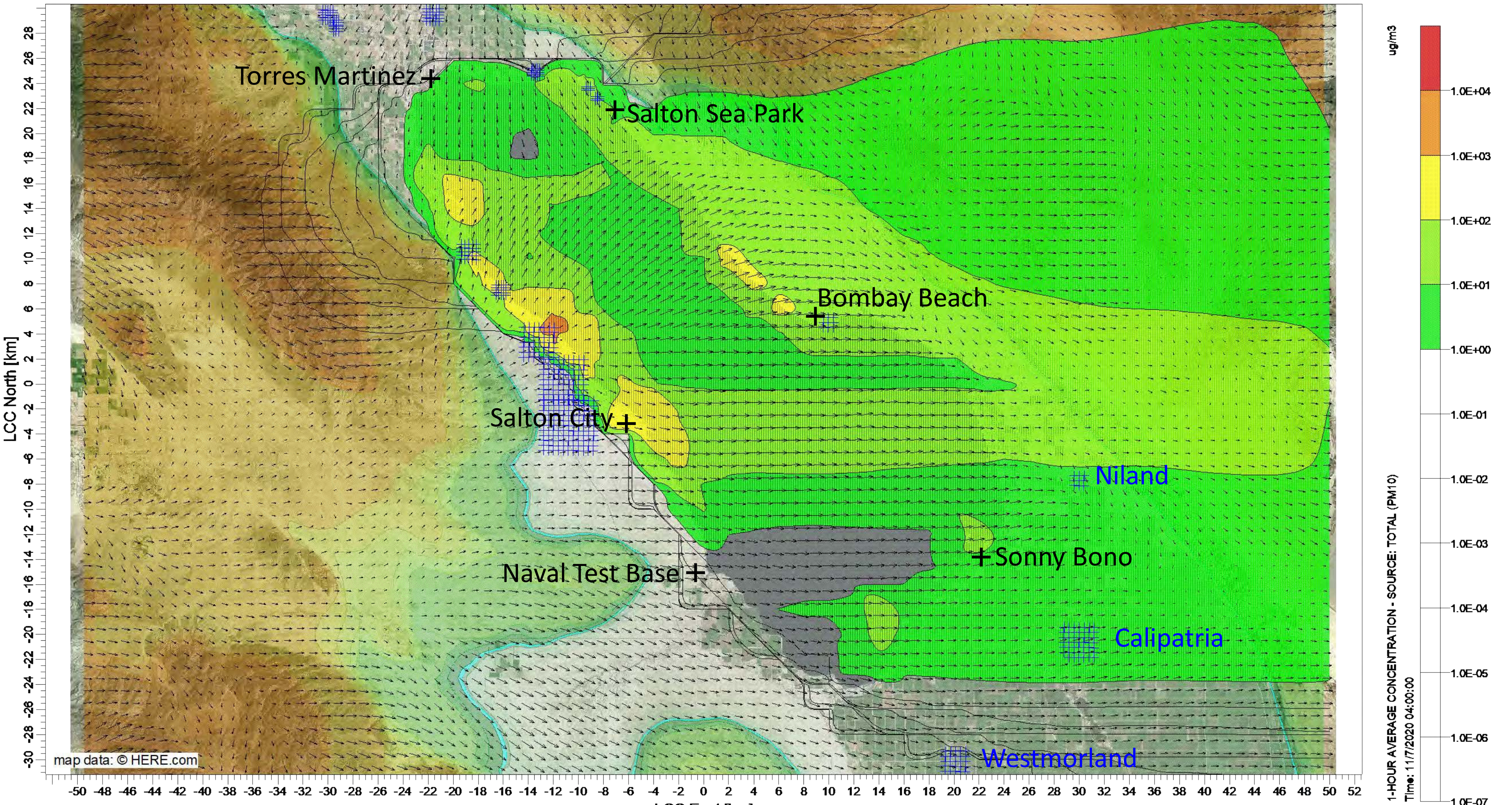
21:00, June 30, 2020; Sand Presence = 80%

Max. Predicted PM_{10} Conc. = 300 μg/m^3



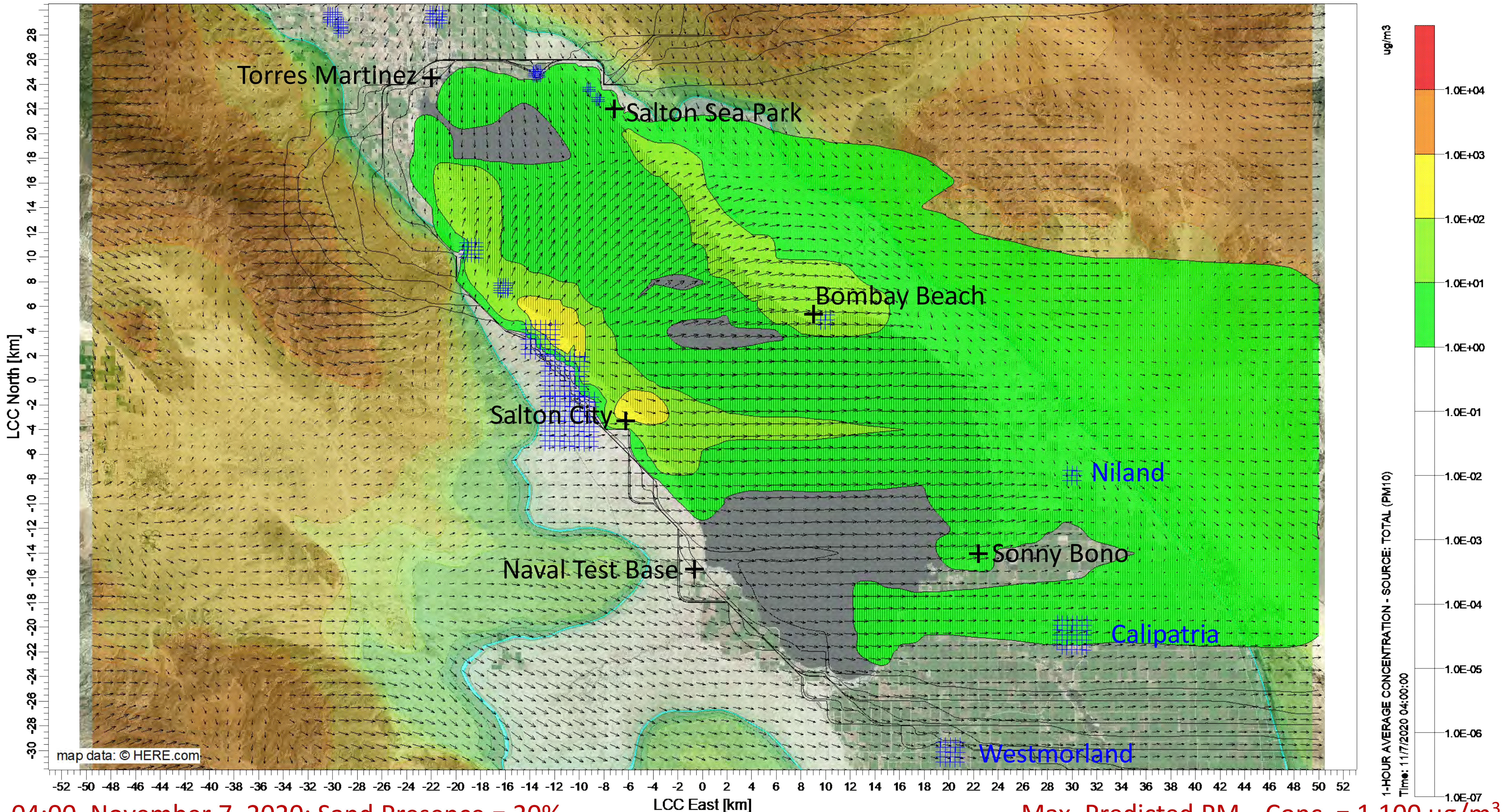
21:00, June 30, 2020; Sand Presence = 20%

Max. Predicted PM_{10} Conc. = 80 μg/m^3



04:00, November 7, 2020; Sand Presence = 80%

Max. Predicted PM_{10} Conc. = 3,200 μg/m^3



04:00, November 7, 2020; Sand Presence = 20%

Max. Predicted PM_{10} Conc. = 1,100 μg/m^3

Attachment B
CALPUFF Predicted 24-Hour Average PM_{10} Concentration Contours of Fugitive Dust Emissions from Salton Sea Exposed Lakebed for Restoration Concepts

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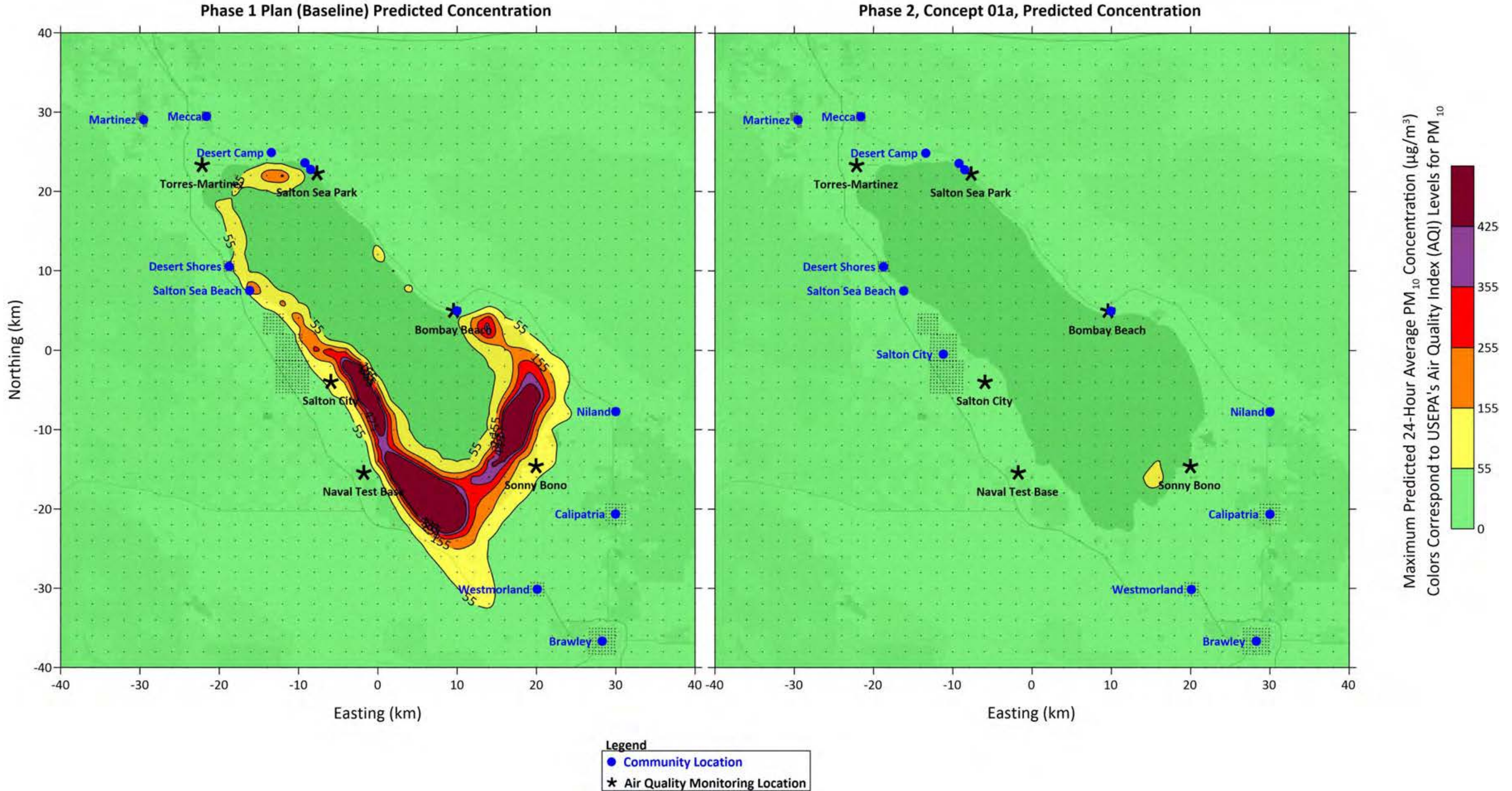
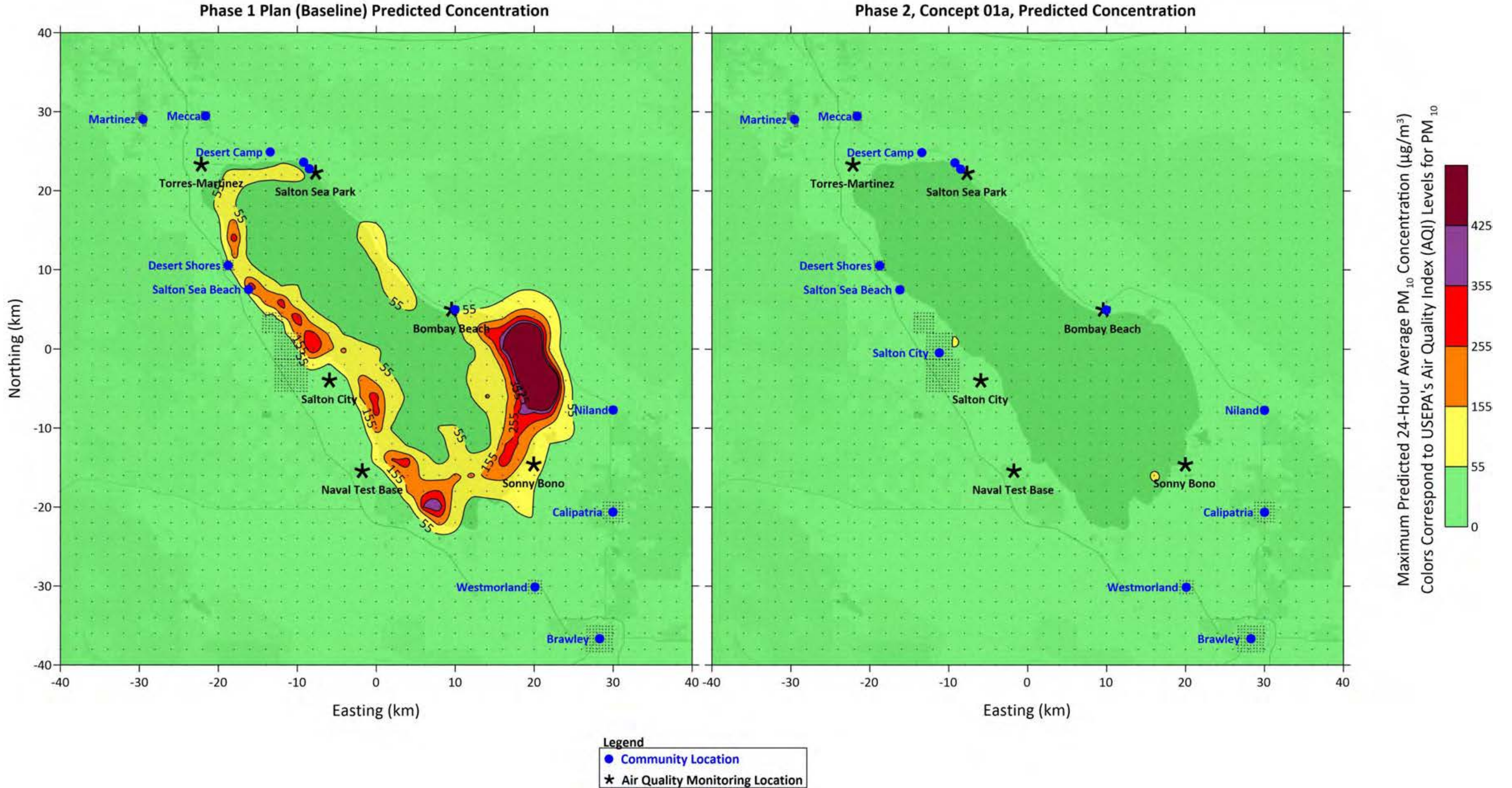
Salton Sea Long Range Plan
CALPUFF Results
Maximum Predicted 24-Hour Average PM_{10} Concentration

Emissions from Exposed Lakebed Only
Restoration Concept Evaluated: Phase 2, Concept 01a
Meteorological Event: January 29, 2020



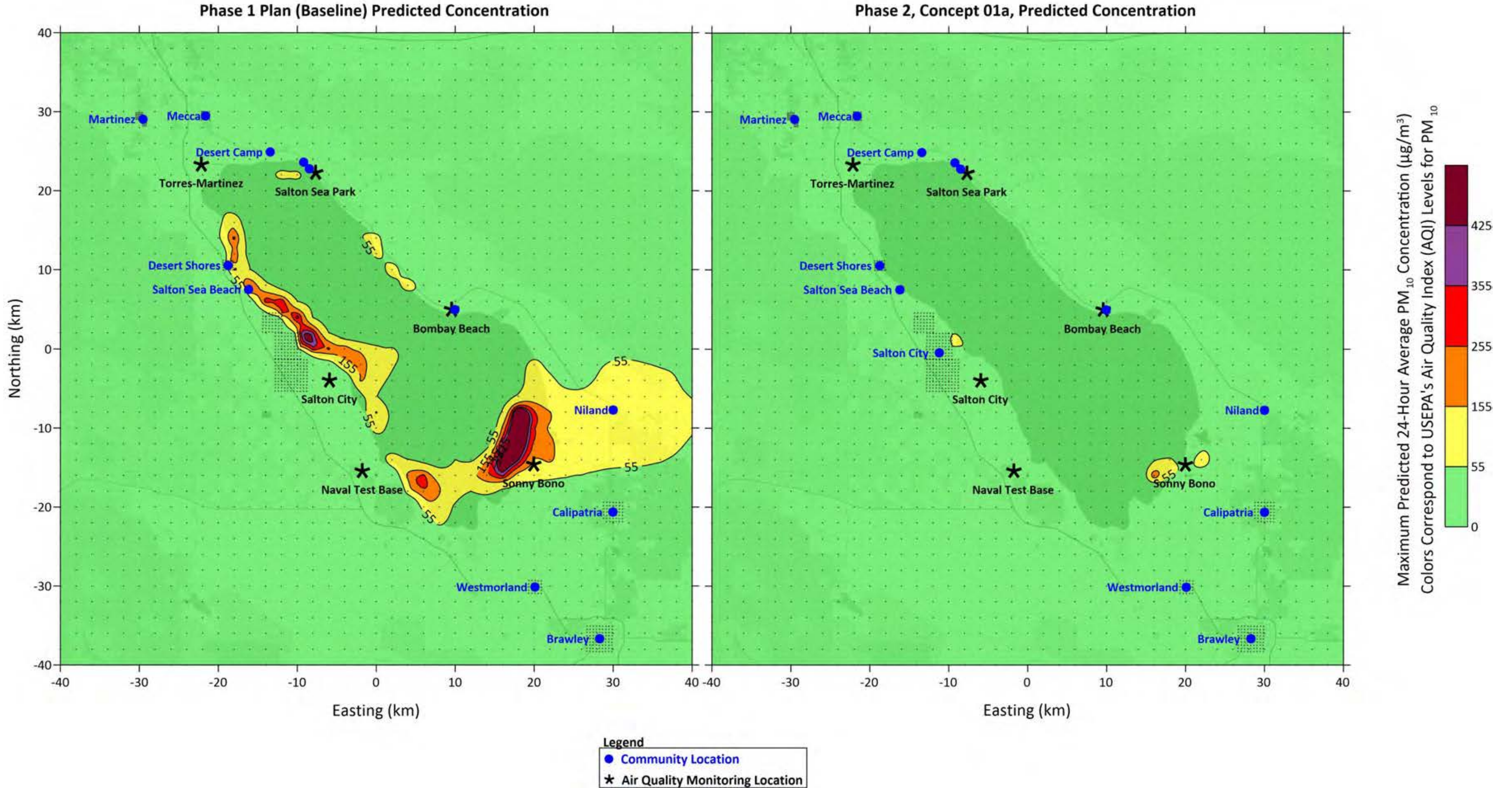
Salton Sea Long Range Plan
CALPUFF Results
Maximum Predicted 24-Hour Average PM_{10} Concentration

Emissions from Exposed Lakebed Only
Restoration Concept Evaluated: Phase 2, Concept 01a
Meteorological Event: March 1, 2020



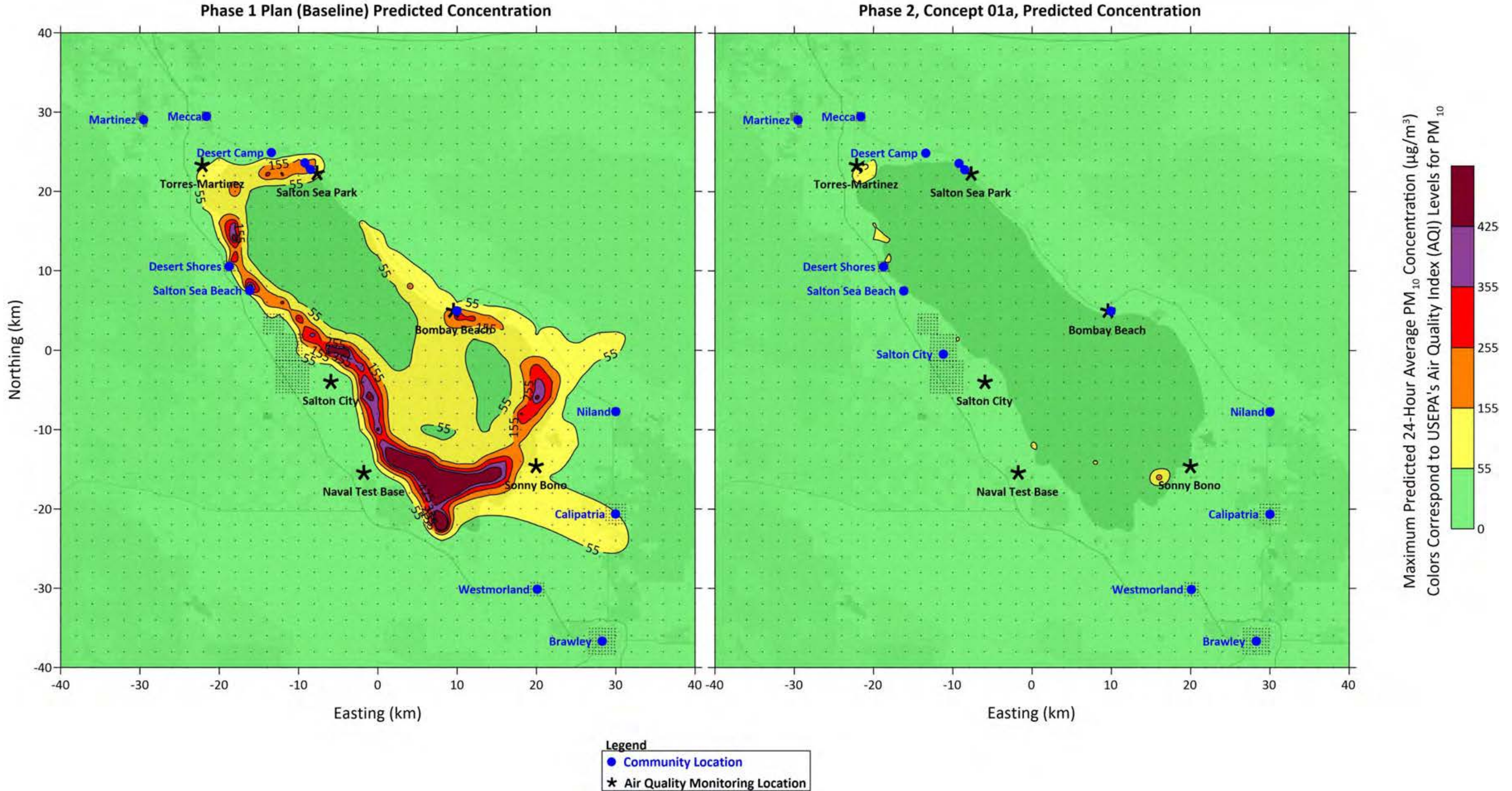
Salton Sea Long Range Plan
CALPUFF Results
Maximum Predicted 24-Hour Average PM_{10} Concentration

Emissions from Exposed Lakebed Only
Restoration Concept Evaluated: Phase 2, Concept 01a
Meteorological Event: June 30, 2020



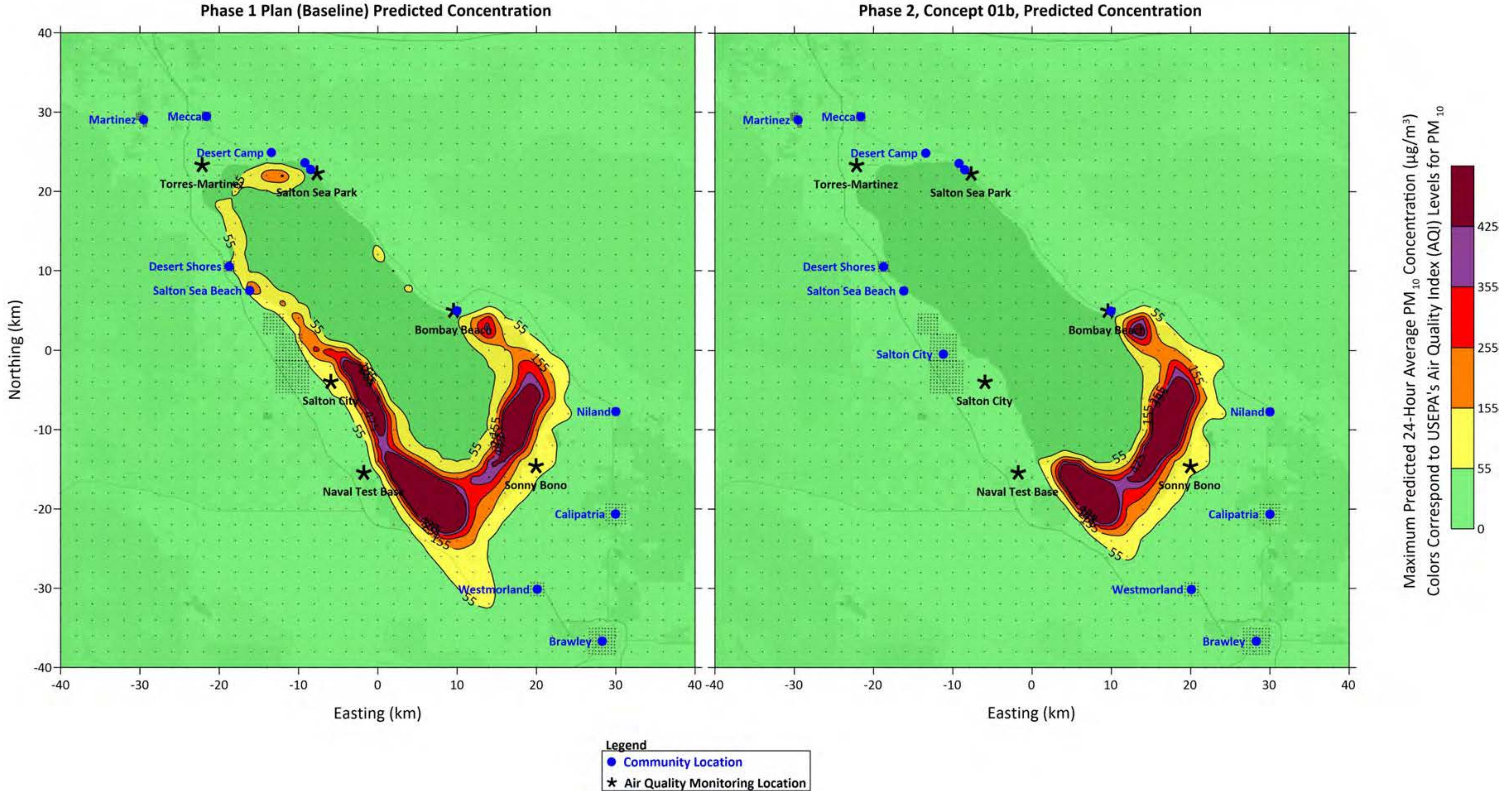
Salton Sea Long Range Plan
CALPUFF Results
Maximum Predicted 24-Hour Average PM_{10} Concentration

Emissions from Exposed Lakebed Only
Restoration Concept Evaluated: Phase 2, Concept 01a
Meteorological Event: November 7, 2020



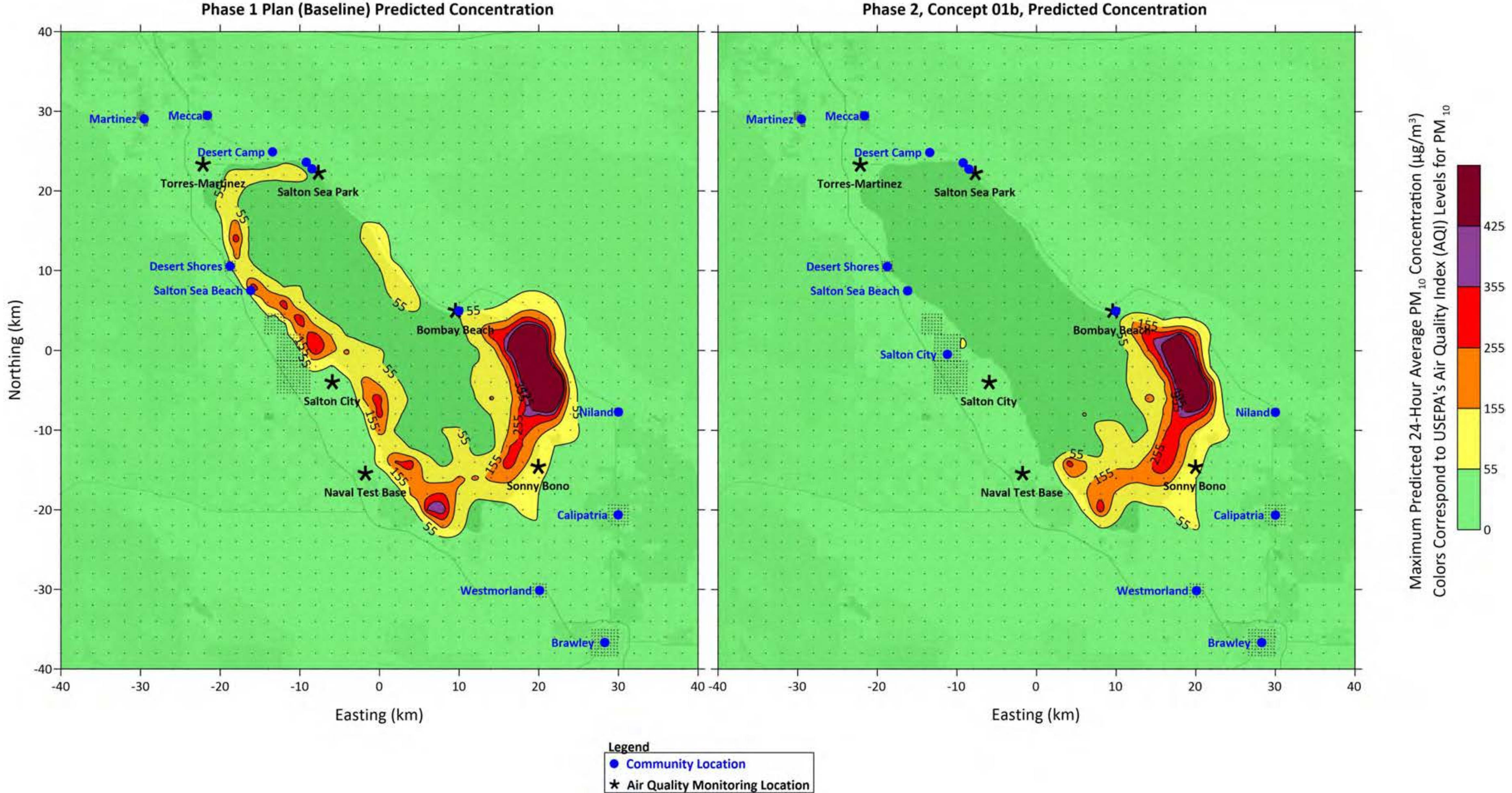
Salton Sea Long Range Plan
CALPUFF Results
Maximum Predicted 24-Hour Average PM_{10} Concentration

Emissions from Exposed Lakebed Only
Restoration Concept Evaluated: Phase 2, Concept 01b
Meteorological Event: January 29, 2020



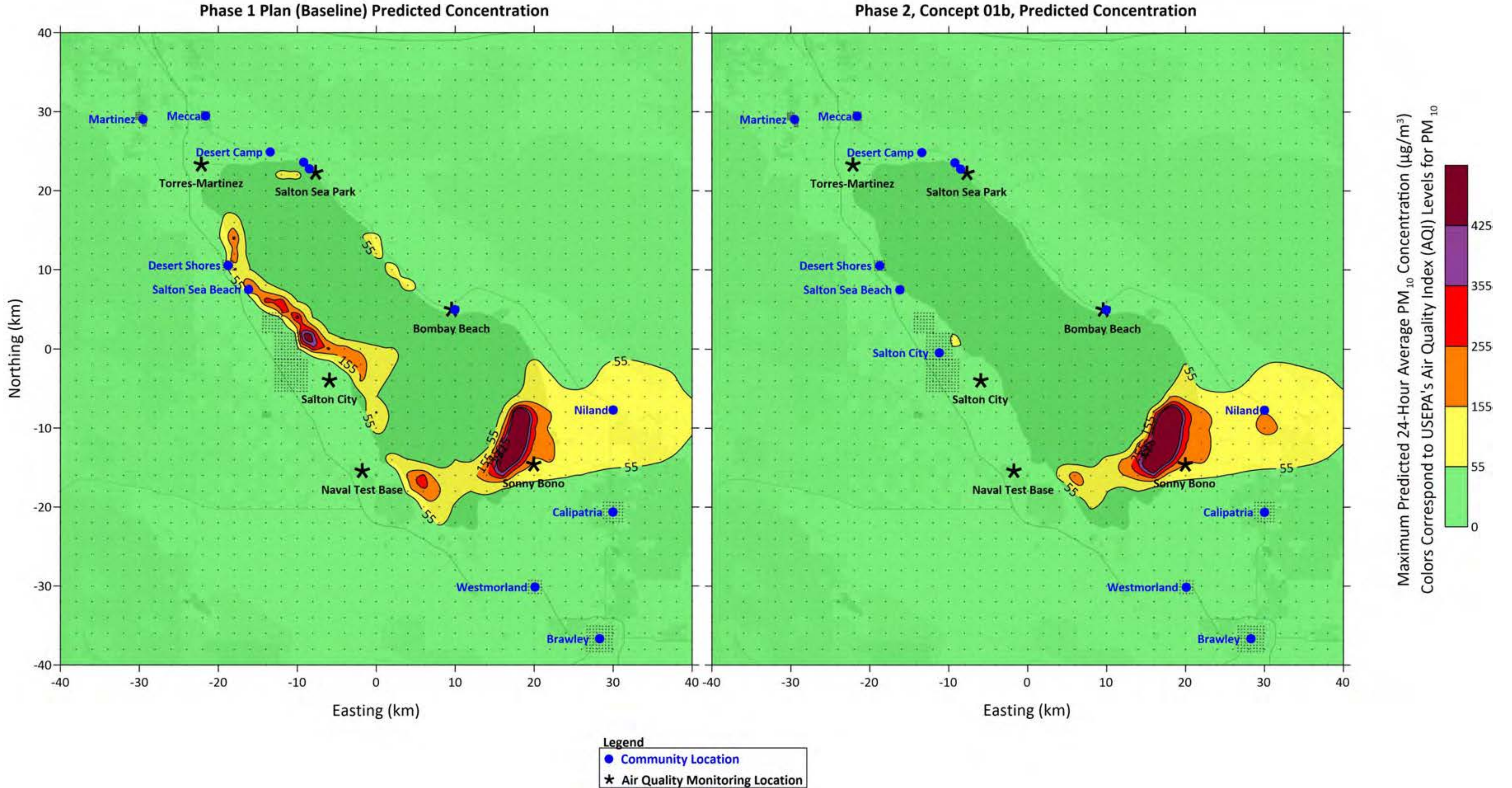
Salton Sea Long Range Plan
CALPUFF Results
Maximum Predicted 24-Hour Average PM_{10} Concentration

Emissions from Exposed Lakebed Only
Restoration Concept Evaluated: Phase 2, Concept 01b
Meteorological Event: March 1, 2020



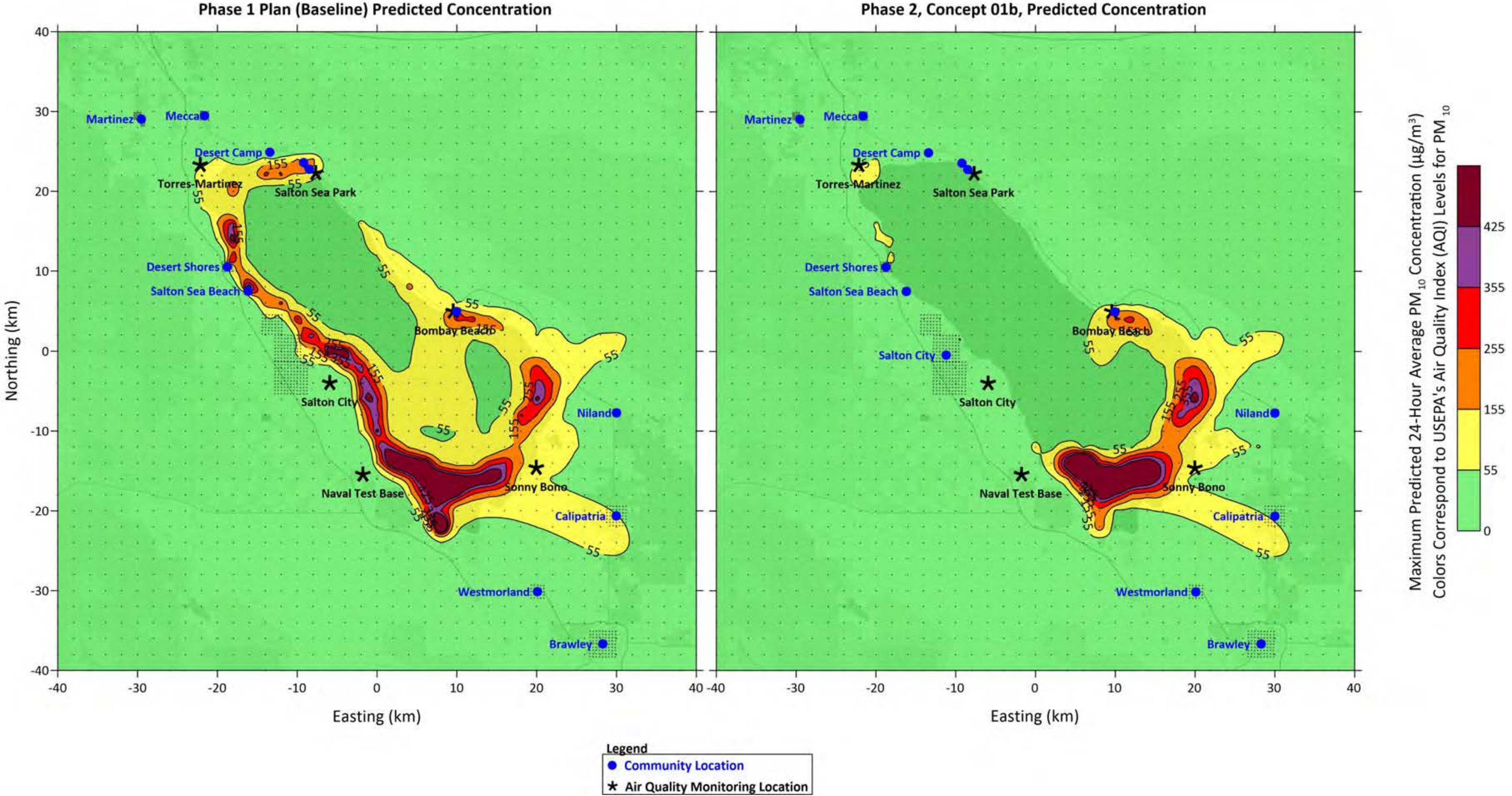
Salton Sea Long Range Plan
CALPUFF Results
Maximum Predicted 24-Hour Average PM_{10} Concentration

Emissions from Exposed Lakebed Only
Restoration Concept Evaluated: Phase 2, Concept 01b
Meteorological Event: June 30, 2020



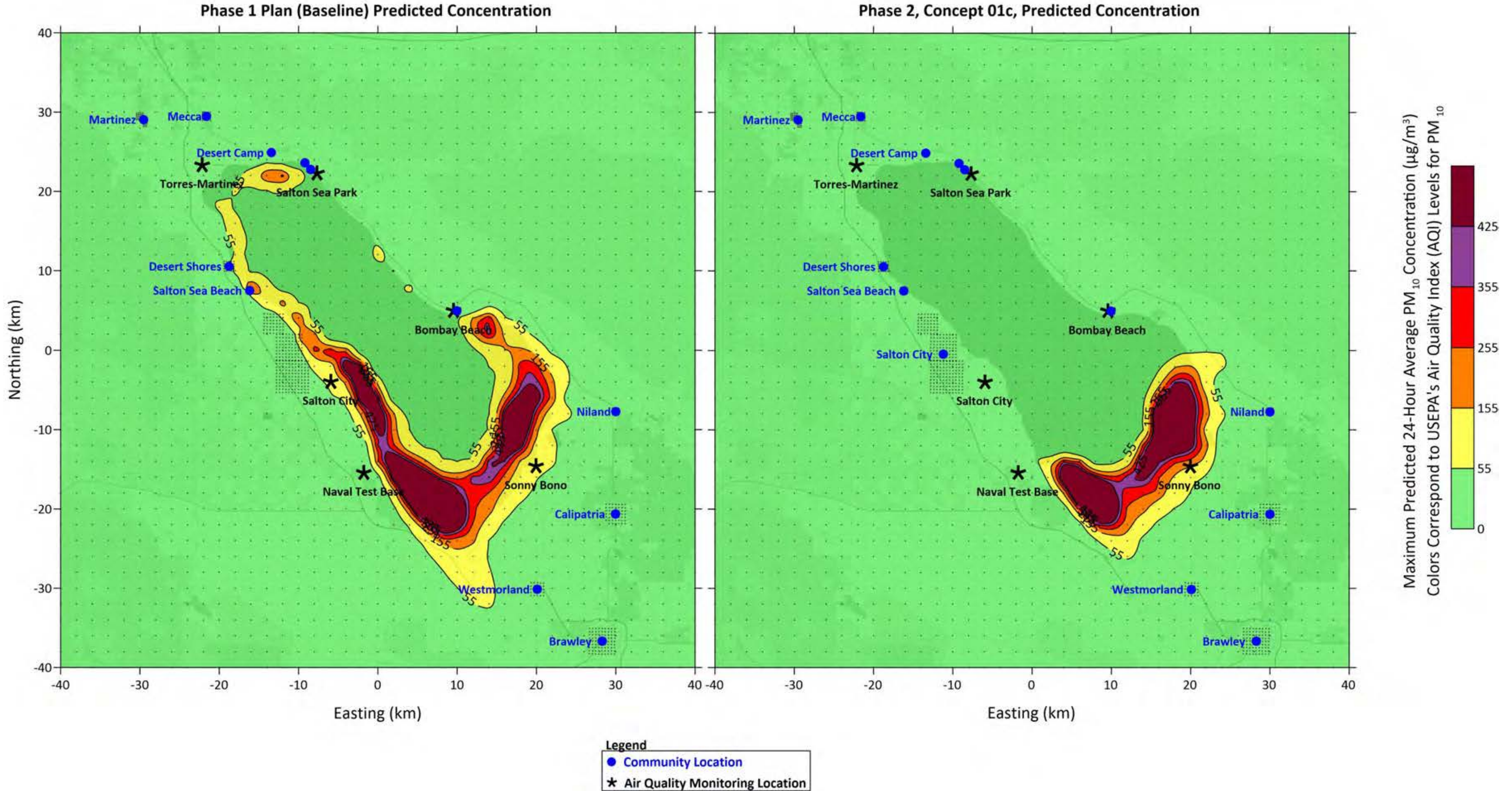
Salton Sea Long Range Plan
CALPUFF Results
Maximum Predicted 24-Hour Average PM_{10} Concentration

Emissions from Exposed Lakebed Only
Restoration Concept Evaluated: Phase 2, Concept 01b
Meteorological Event: November 7, 2020



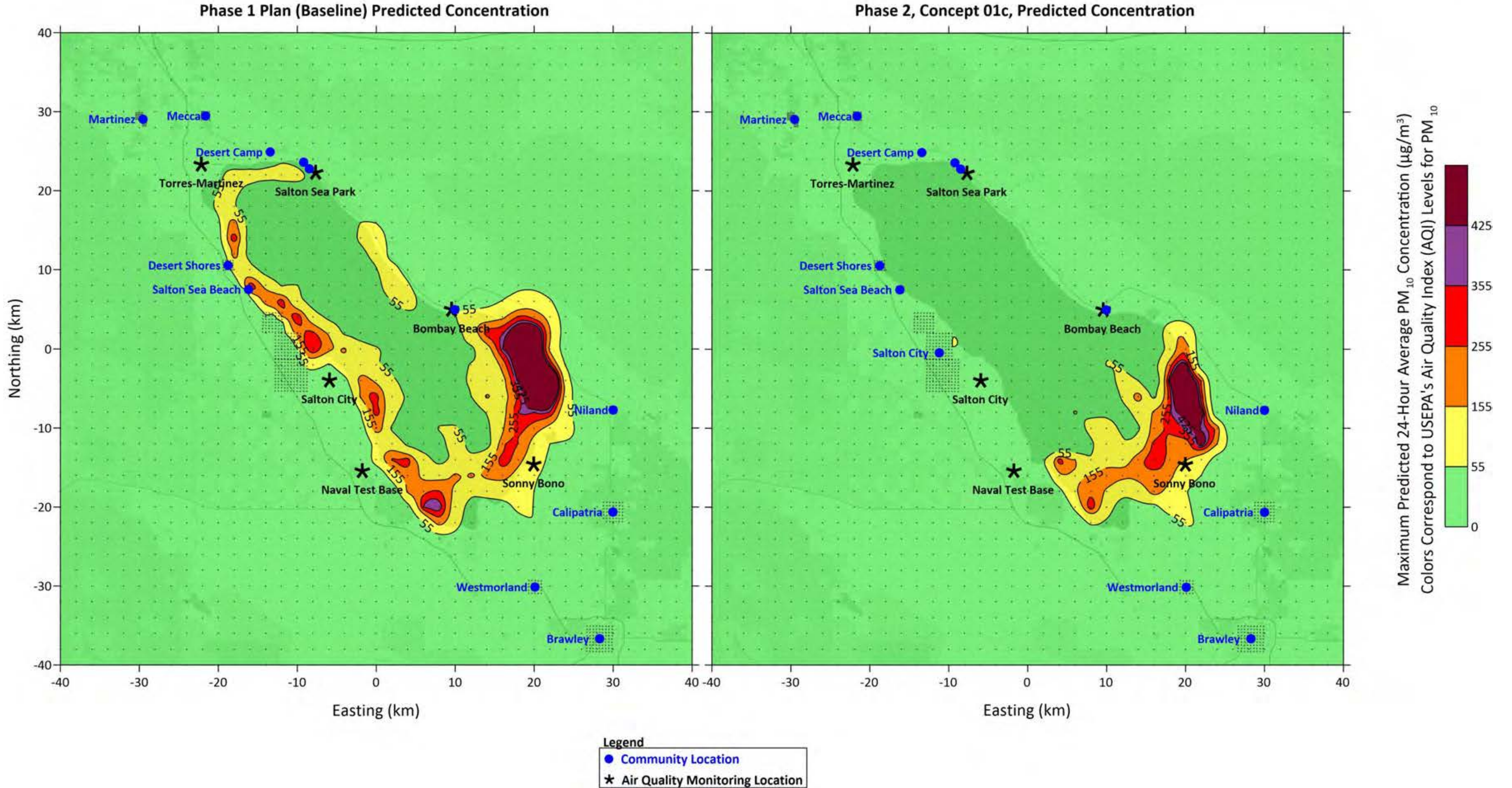
Salton Sea Long Range Plan
CALPUFF Results
Maximum Predicted 24-Hour Average PM_{10} Concentration

Emissions from Exposed Lakebed Only
Restoration Concept Evaluated: Phase 2, Concept 01c
Meteorological Event: January 29, 2020



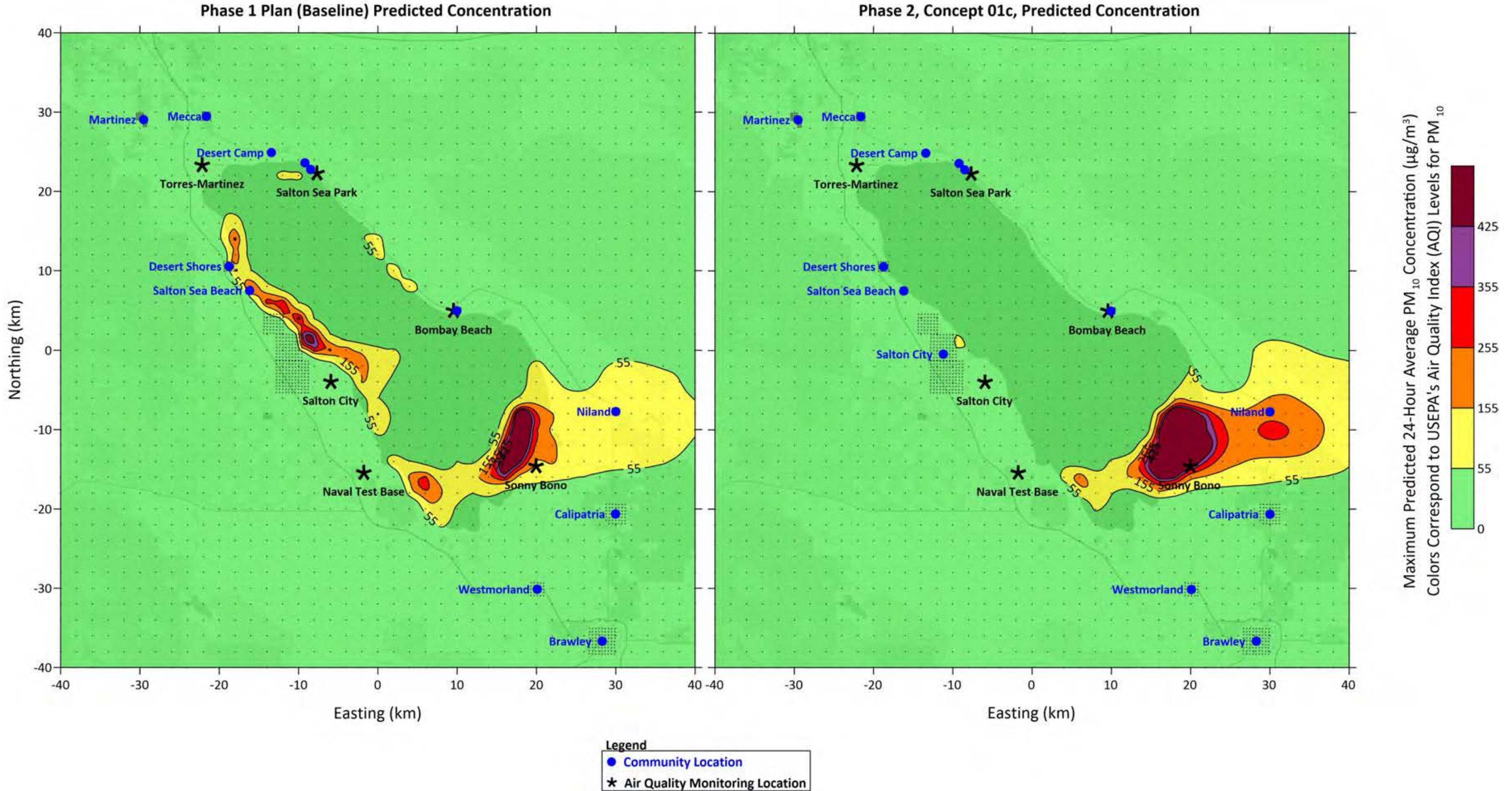
Salton Sea Long Range Plan
CALPUFF Results
Maximum Predicted 24-Hour Average PM_{10} Concentration

Emissions from Exposed Lakebed Only
Restoration Concept Evaluated: Phase 2, Concept 01c
Meteorological Event: March 1, 2020



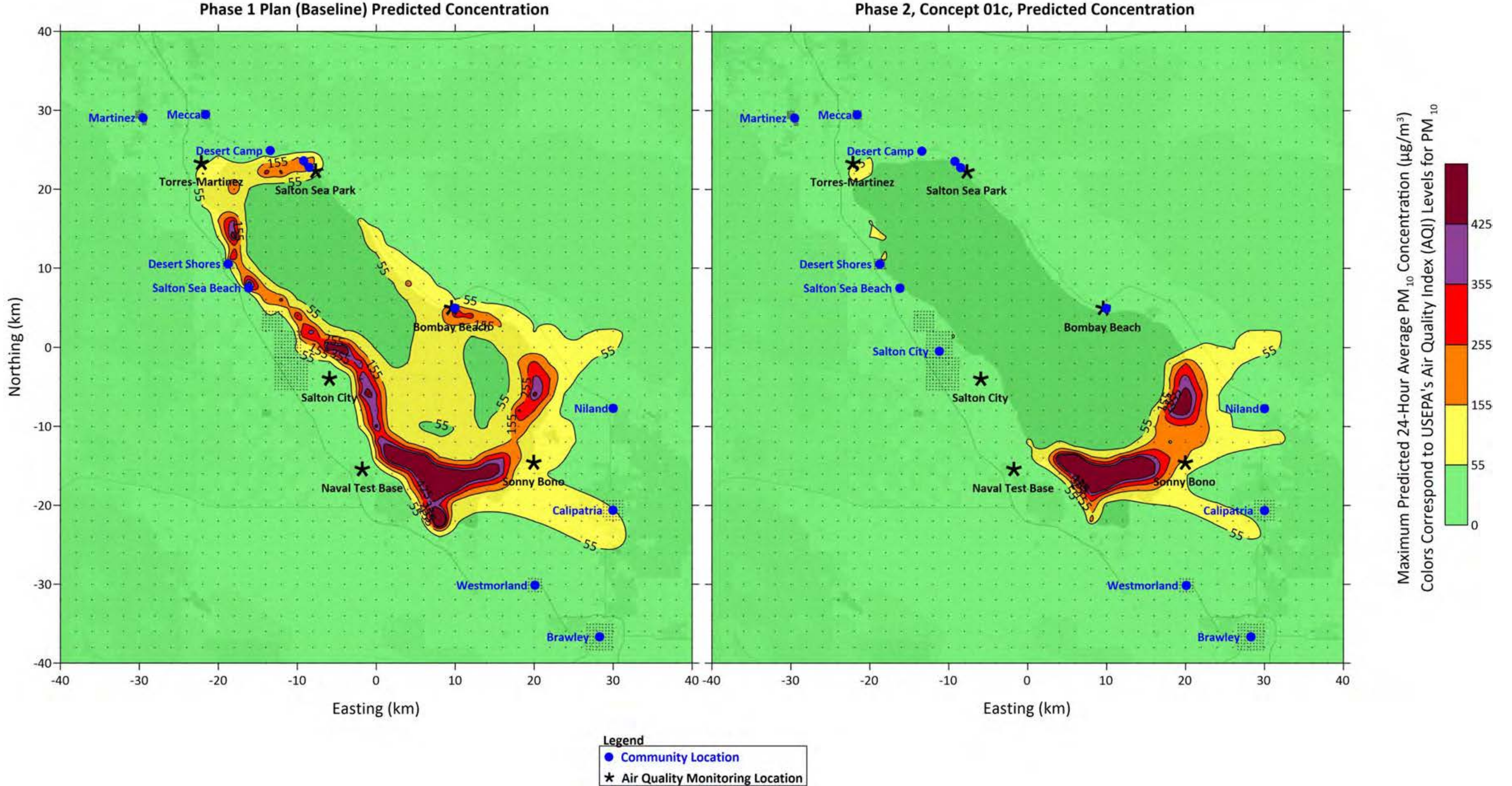
Salton Sea Long Range Plan
CALPUFF Results
Maximum Predicted 24-Hour Average PM_{10} Concentration

Emissions from Exposed Lakebed Only
Restoration Concept Evaluated: Phase 2, Concept 01c
Meteorological Event: June 30, 2020



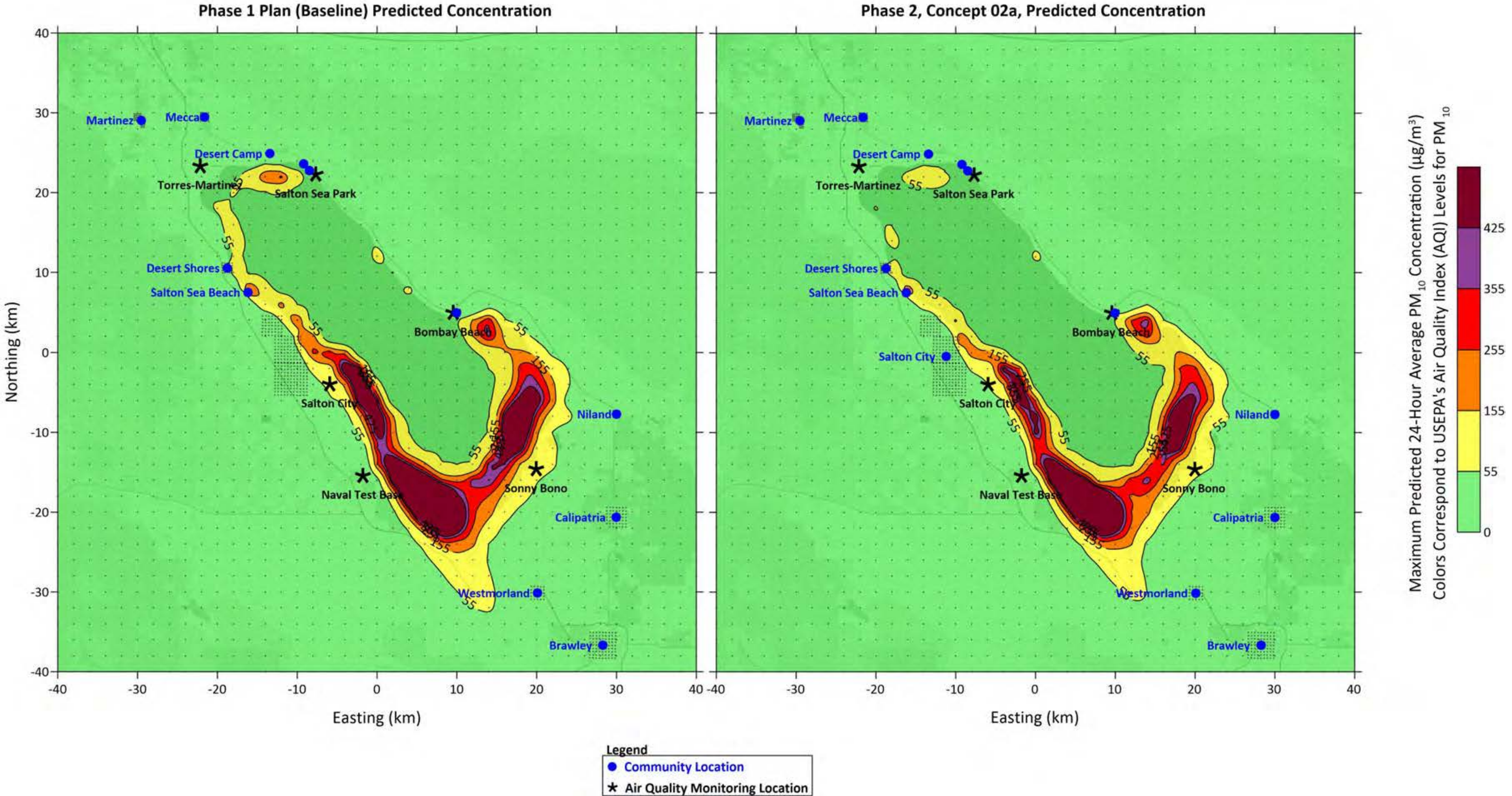
Salton Sea Long Range Plan
CALPUFF Results
Maximum Predicted 24-Hour Average PM_{10} Concentration

Emissions from Exposed Lakebed Only
Restoration Concept Evaluated: Phase 2, Concept 01c
Meteorological Event: November 7, 2020



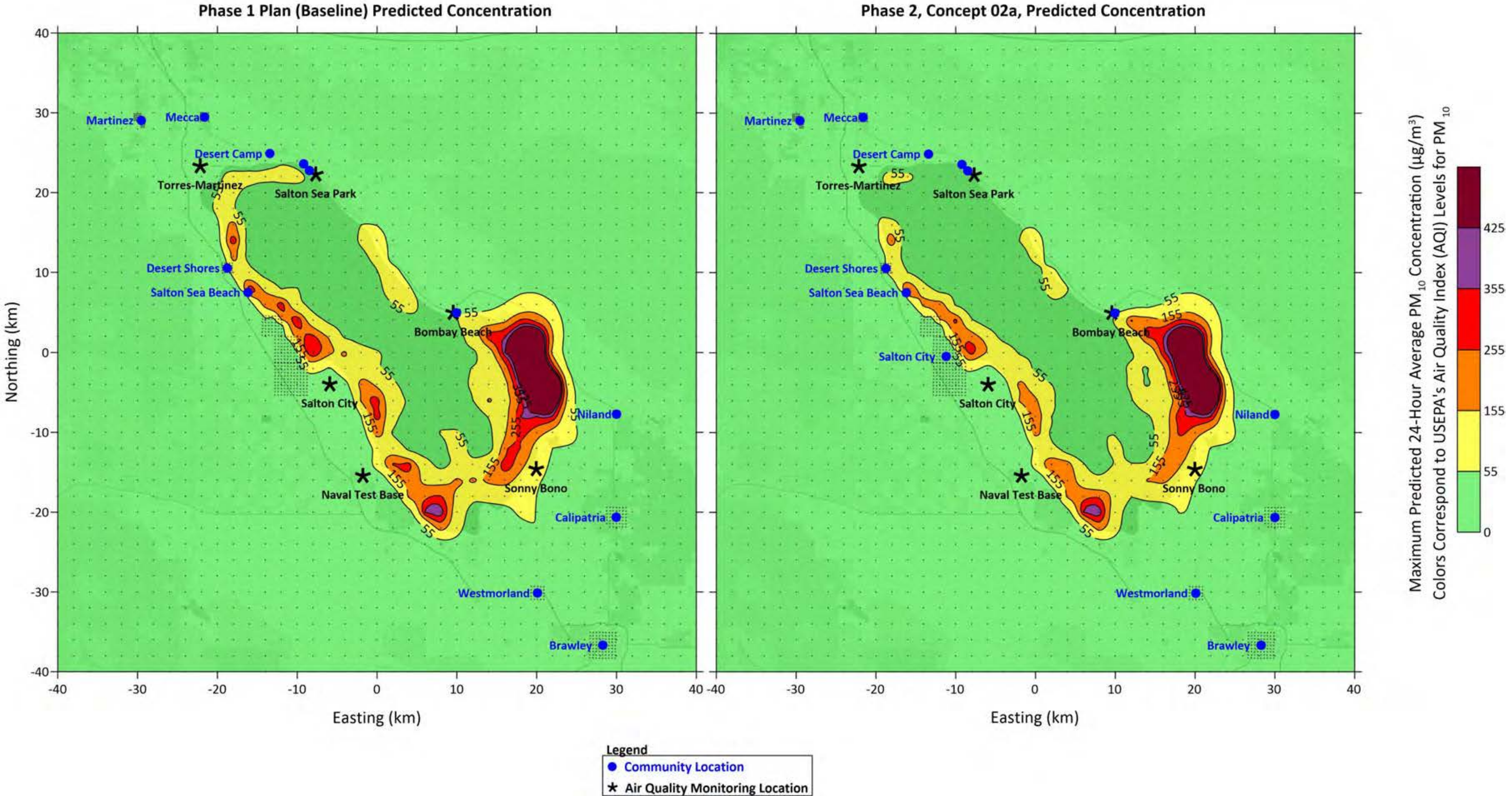
Salton Sea Long Range Plan
CALPUFF Results
Maximum Predicted 24-Hour Average PM_{10} Concentration

Emissions from Exposed Lakebed Only
Restoration Concept Evaluated: Phase 2, Concept 02a
Meteorological Event: January 29, 2020



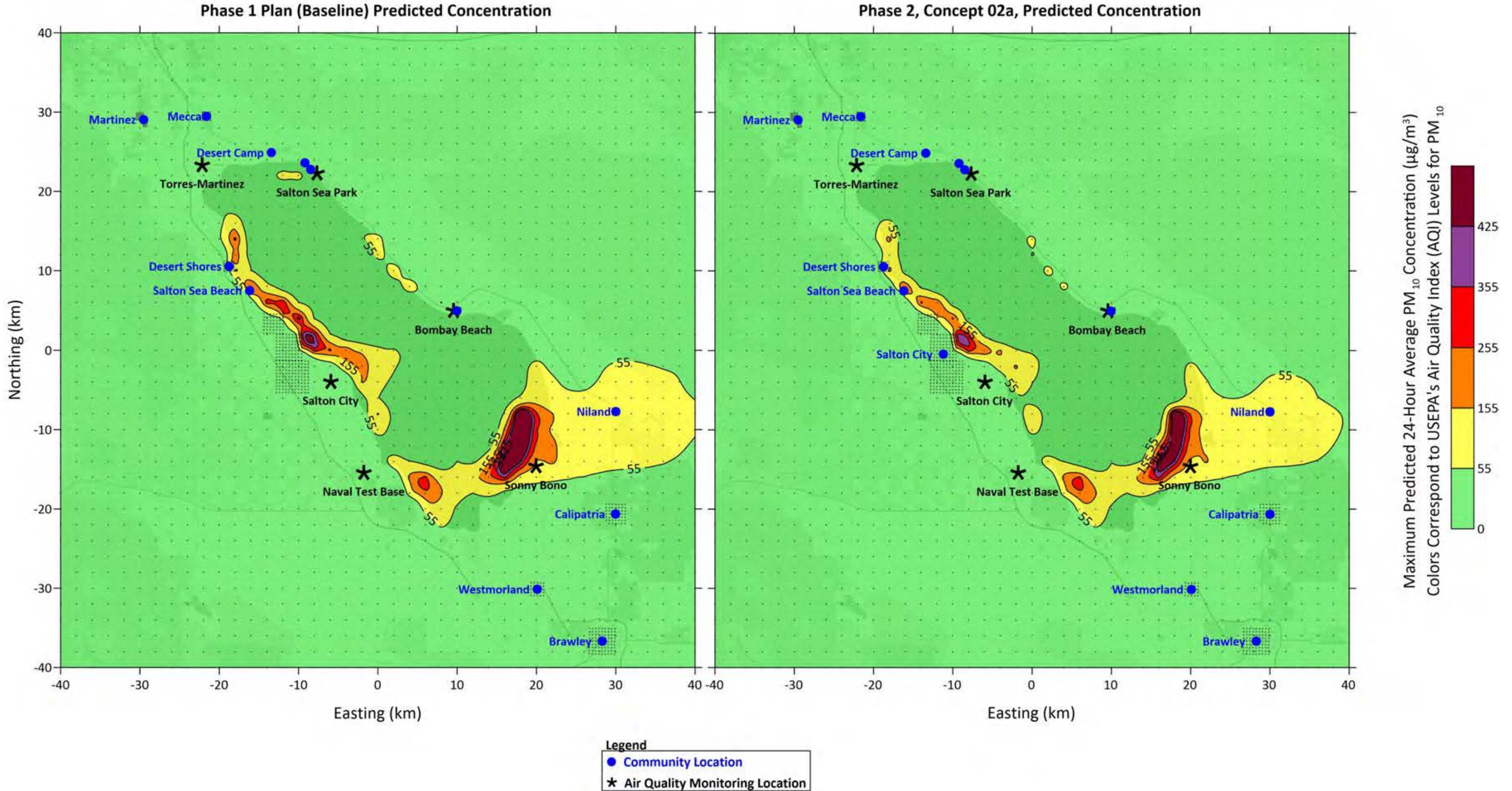
Salton Sea Long Range Plan
CALPUFF Results
Maximum Predicted 24-Hour Average PM_{10} Concentration

Emissions from Exposed Lakebed Only
Restoration Concept Evaluated: Phase 2, Concept 02a
Meteorological Event: March 1, 2020



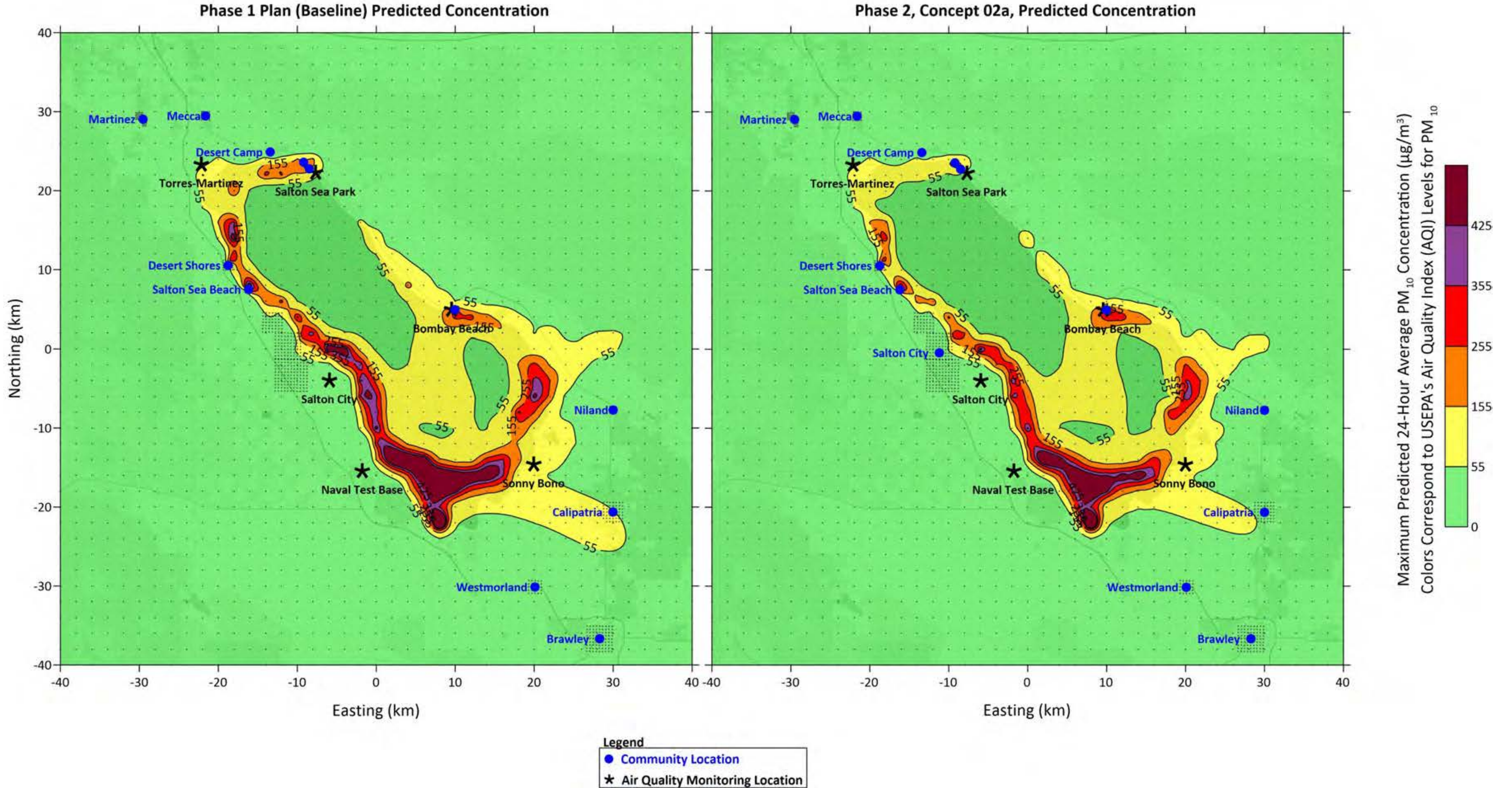
Salton Sea Long Range Plan
CALPUFF Results
Maximum Predicted 24-Hour Average PM_{10} Concentration

Emissions from Exposed Lakebed Only
Restoration Concept Evaluated: Phase 2, Concept 02a
Meteorological Event: June 30, 2020



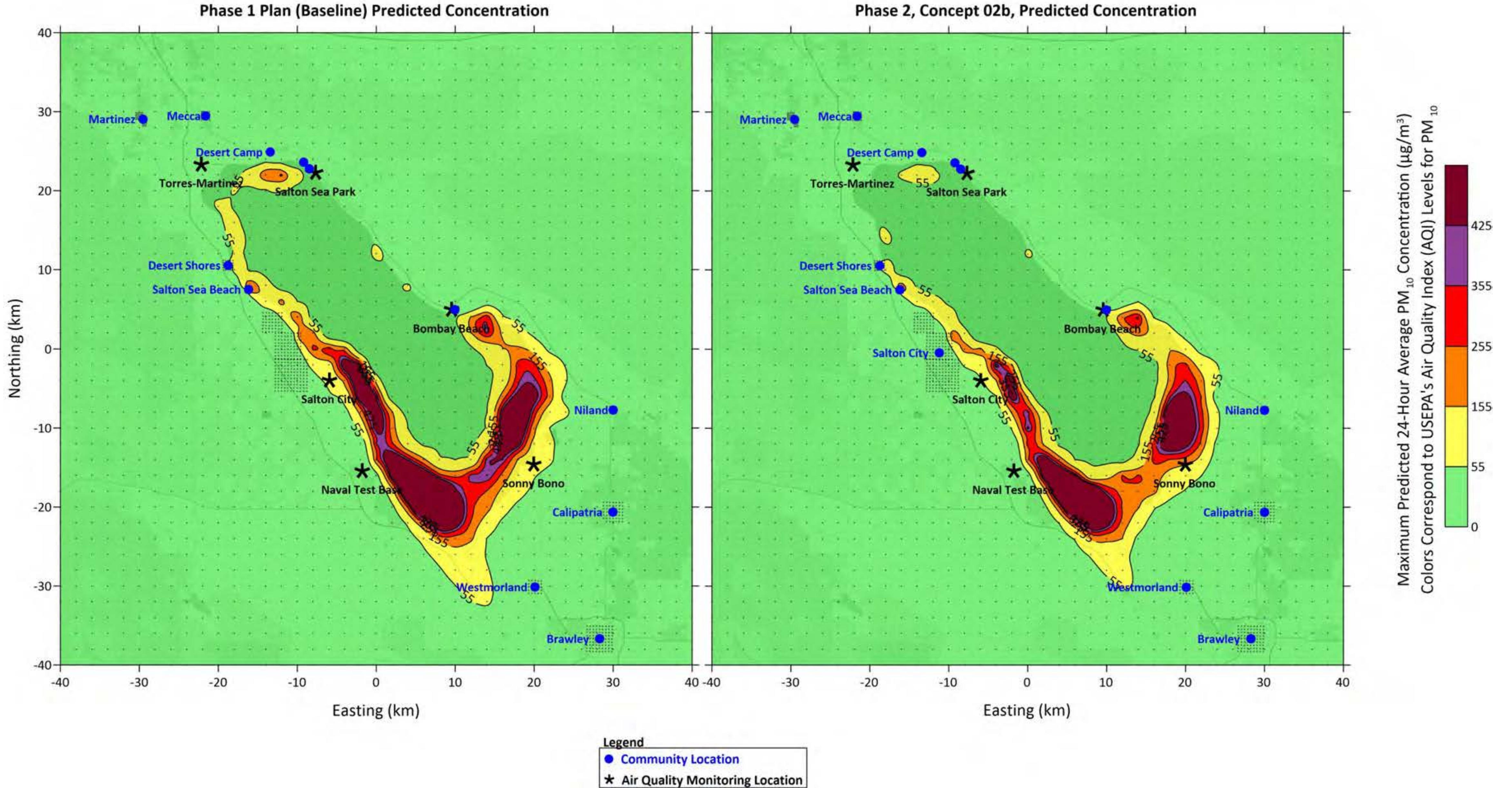
Salton Sea Long Range Plan
CALPUFF Results
Maximum Predicted 24-Hour Average PM_{10} Concentration

Emissions from Exposed Lakebed Only
Restoration Concept Evaluated: Phase 2, Concept 02a
Meteorological Event: November 7, 2020



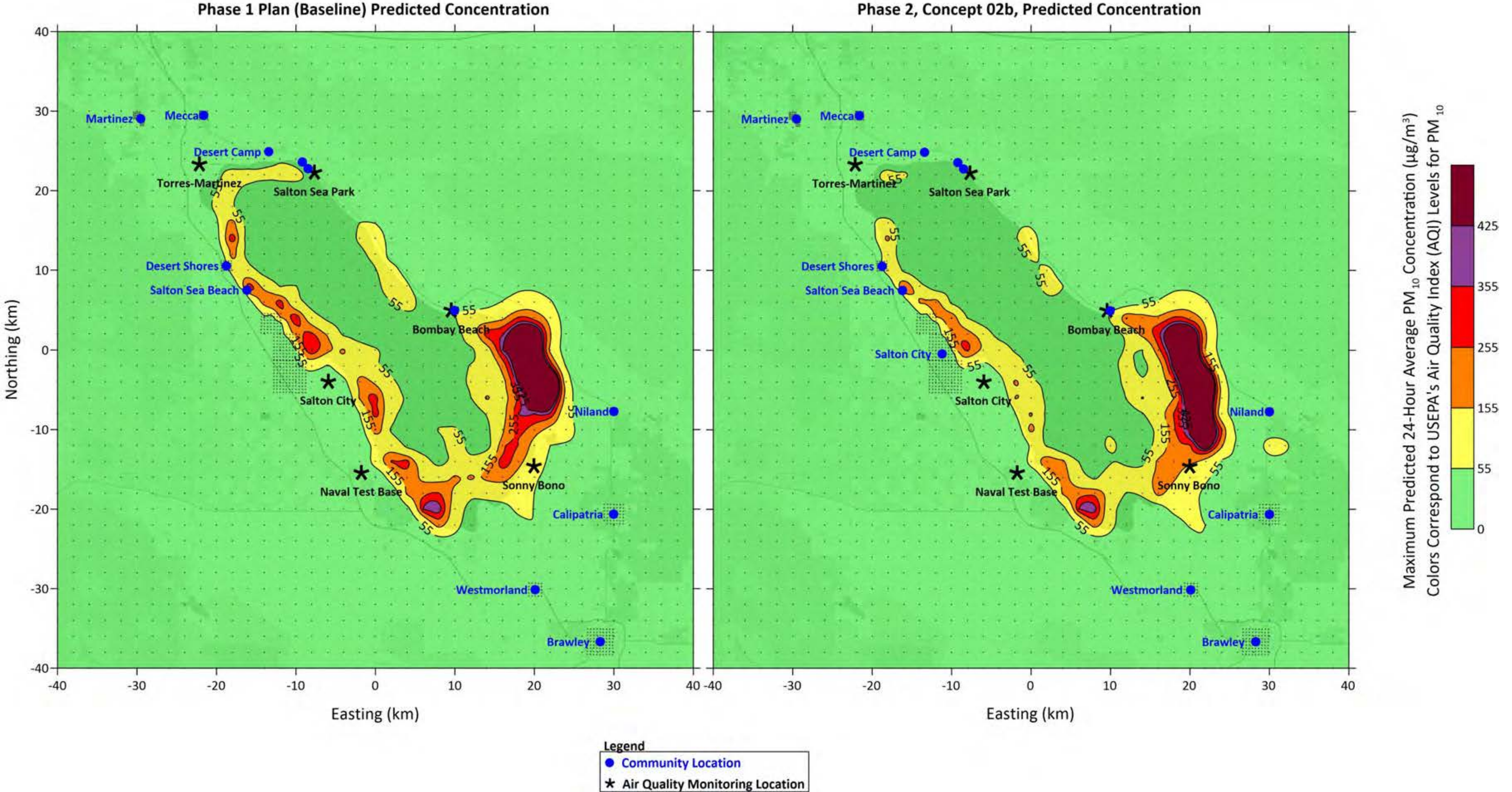
Salton Sea Long Range Plan
CALPUFF Results
Maximum Predicted 24-Hour Average PM_{10} Concentration

Emissions from Exposed Lakebed Only
Restoration Concept Evaluated: Phase 2, Concept 02b
Meteorological Event: January 29, 2020



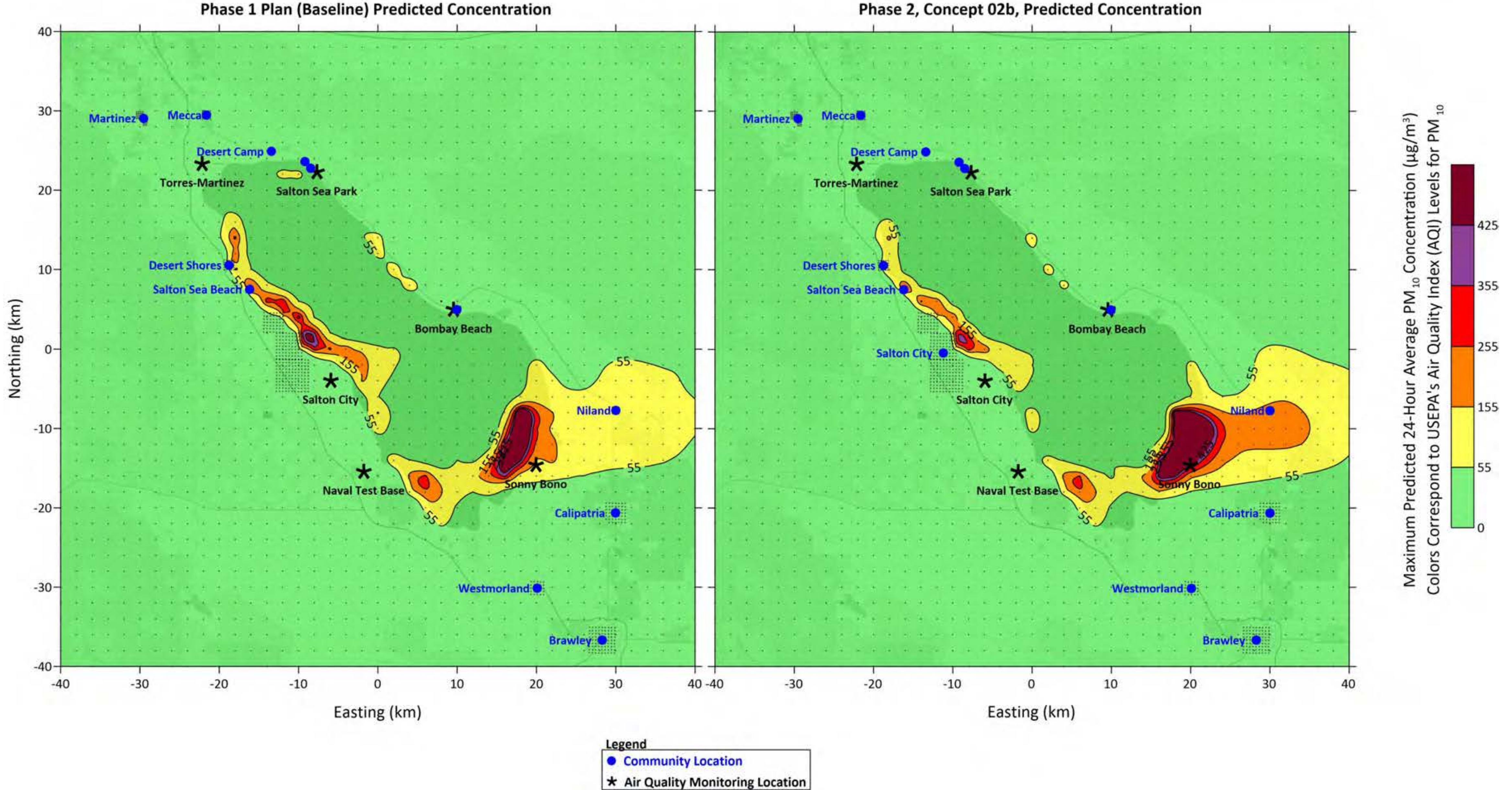
Salton Sea Long Range Plan
CALPUFF Results
Maximum Predicted 24-Hour Average PM_{10} Concentration

Emissions from Exposed Lakebed Only
Restoration Concept Evaluated: Phase 2, Concept 02b
Meteorological Event: March 1, 2020



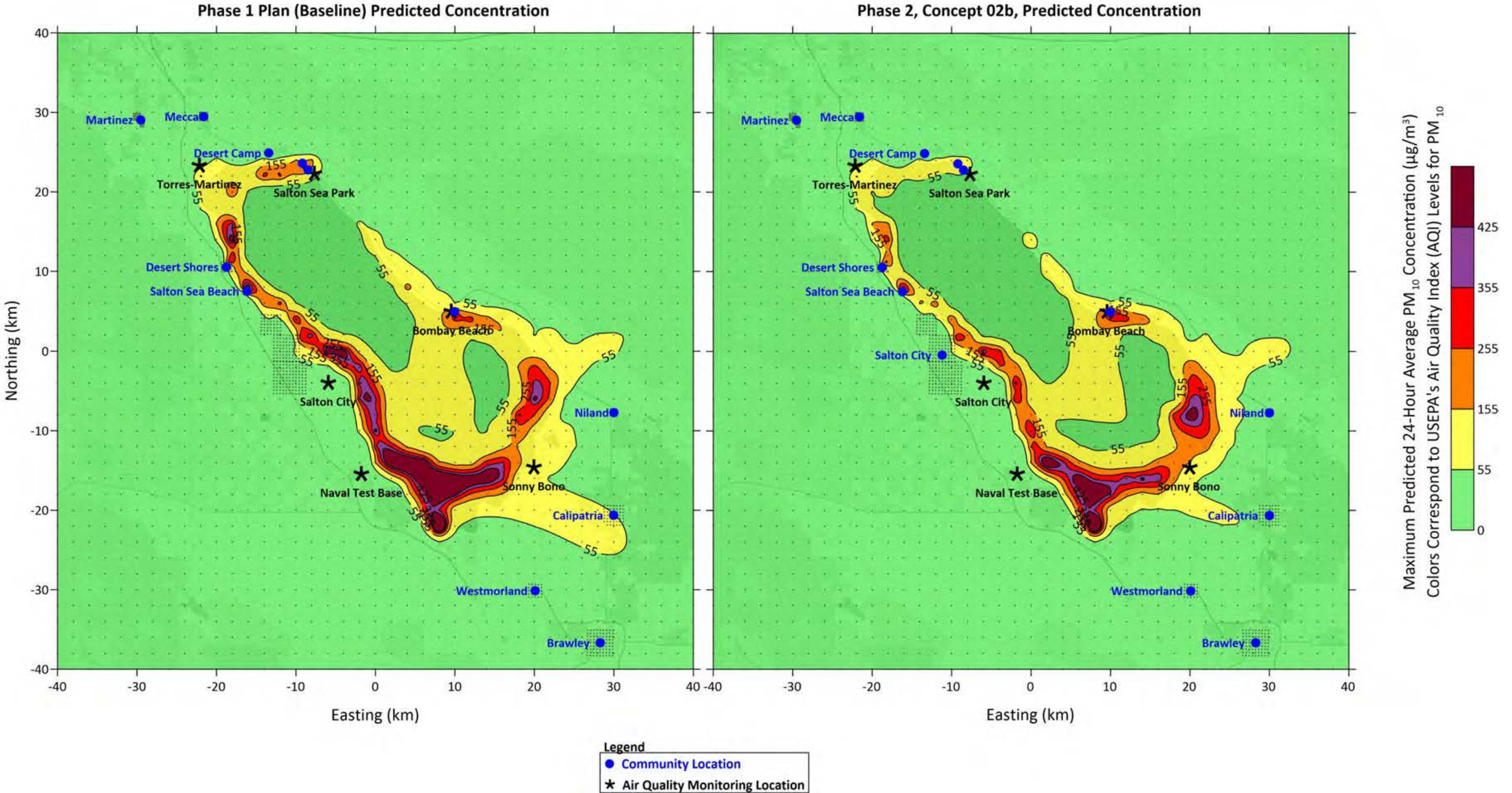
Salton Sea Long Range Plan
CALPUFF Results
Maximum Predicted 24-Hour Average PM_{10} Concentration

Emissions from Exposed Lakebed Only
Restoration Concept Evaluated: Phase 2, Concept 02b
Meteorological Event: June 30, 2020



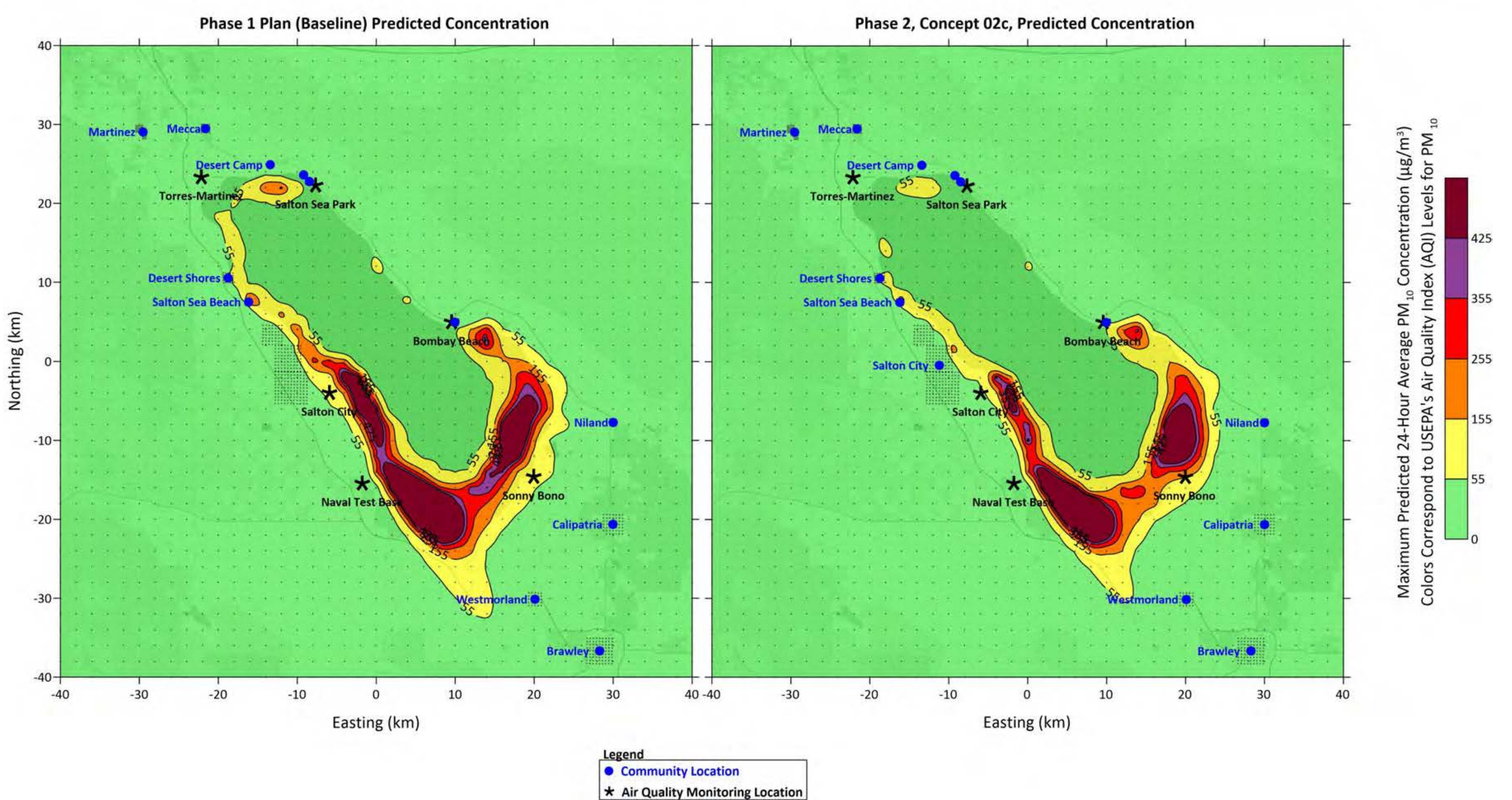
Salton Sea Long Range Plan
CALPUFF Results
Maximum Predicted 24-Hour Average PM_{10} Concentration

Emissions from Exposed Lakebed Only
Restoration Concept Evaluated: Phase 2, Concept 02b
Meteorological Event: November 7, 2020



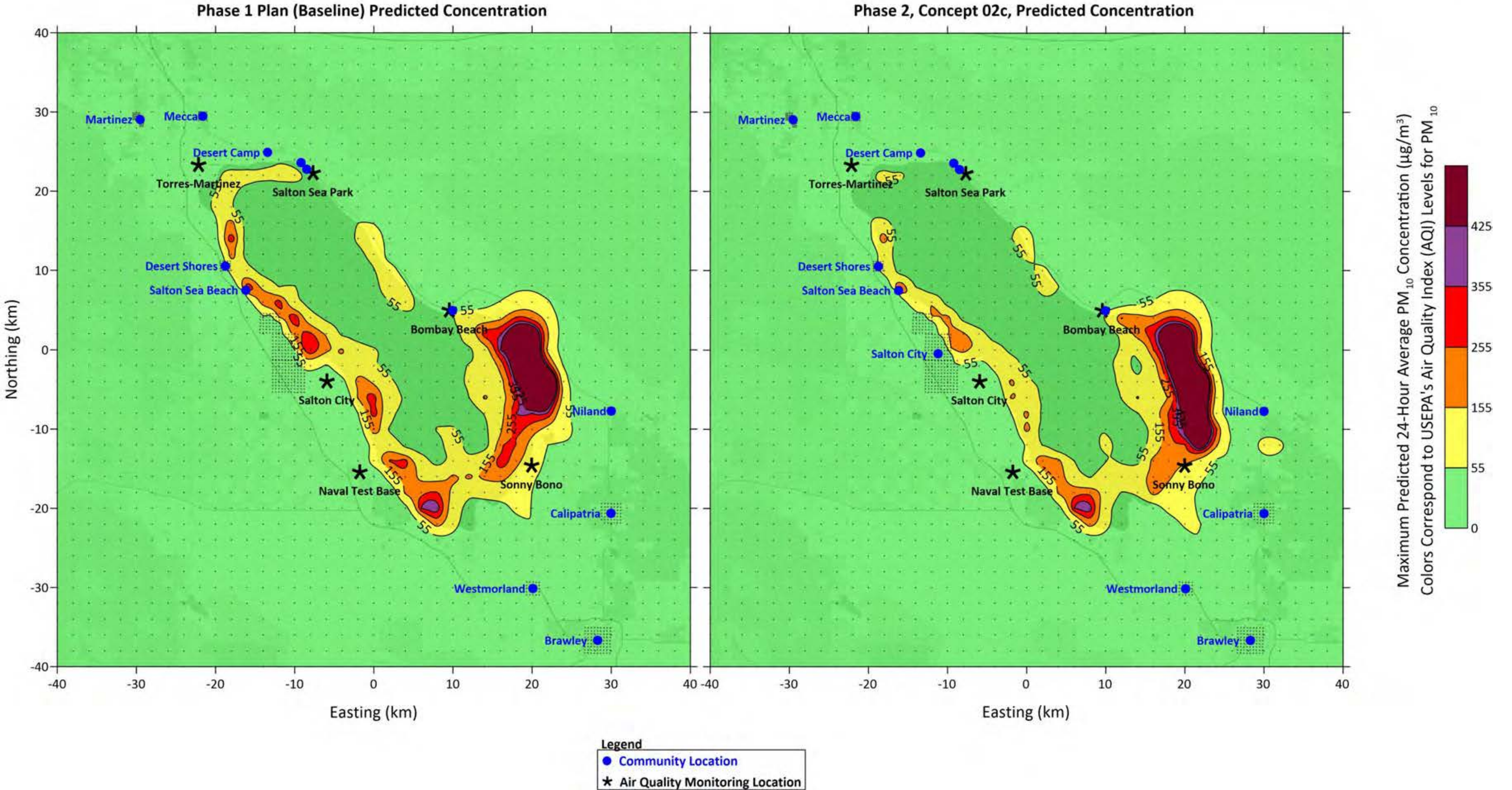
Salton Sea Long Range Plan
CALPUFF Results
Maximum Predicted 24-Hour Average PM_{10} Concentration

Emissions from Exposed Lakebed Only
Restoration Concept Evaluated: Phase 2, Concept 02c
Meteorological Event: January 29, 2020



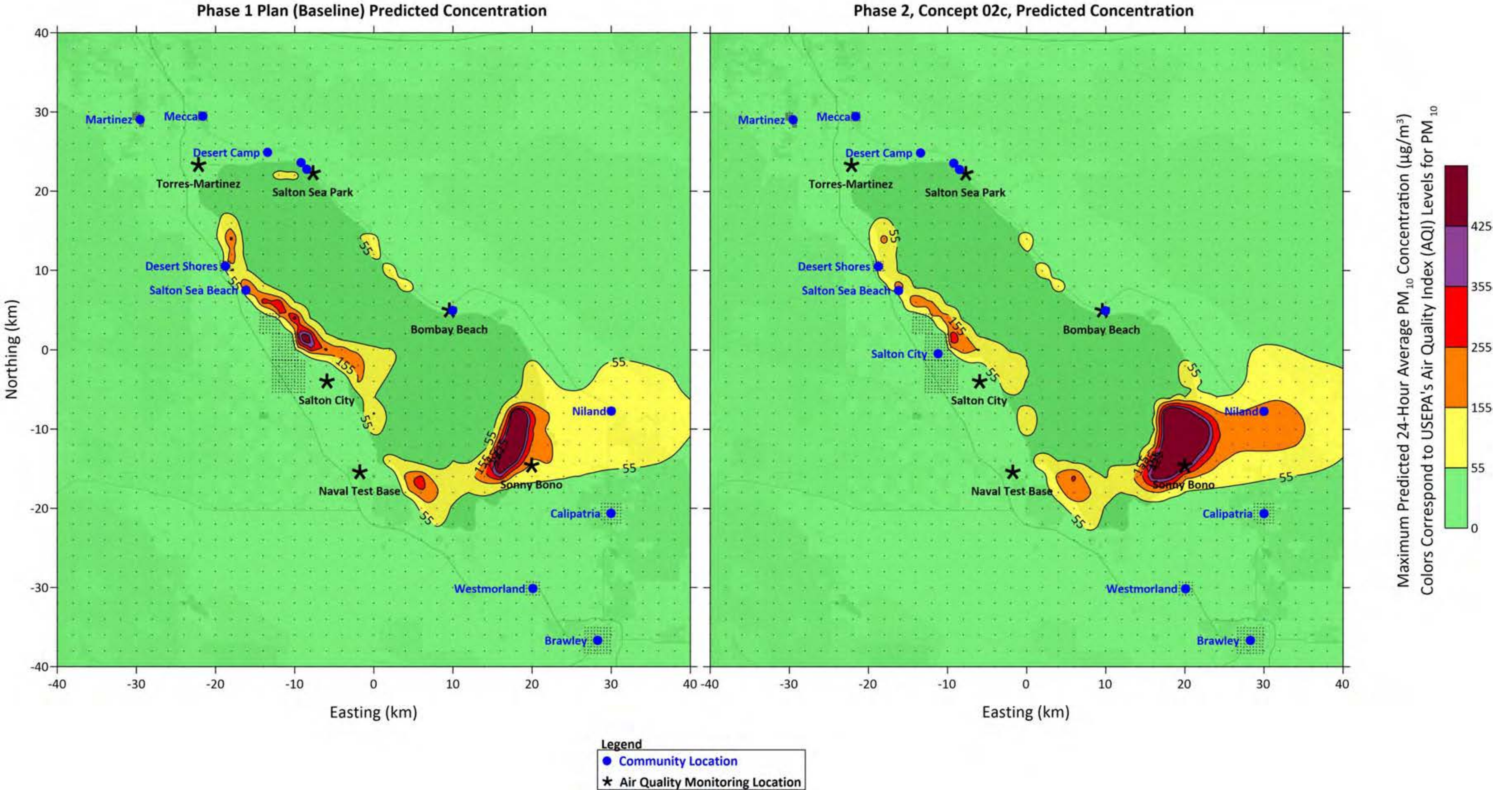
Salton Sea Long Range Plan
CALPUFF Results
Maximum Predicted 24-Hour Average PM_{10} Concentration

Emissions from Exposed Lakebed Only
Restoration Concept Evaluated: Phase 2, Concept 02c
Meteorological Event: March 1, 2020



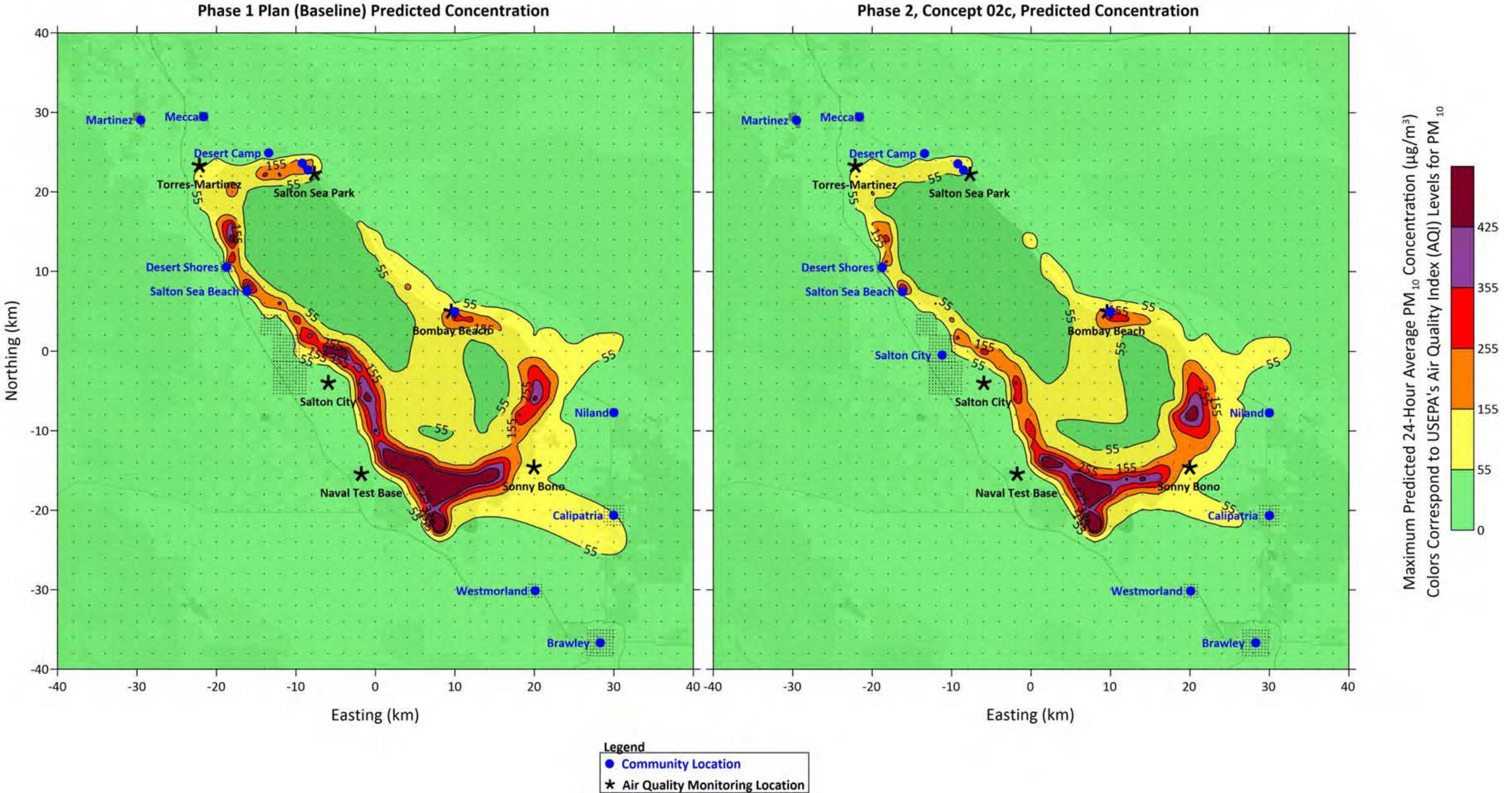
Salton Sea Long Range Plan
CALPUFF Results
Maximum Predicted 24-Hour Average PM_{10} Concentration

Emissions from Exposed Lakebed Only
Restoration Concept Evaluated: Phase 2, Concept 02c
Meteorological Event: June 30, 2020



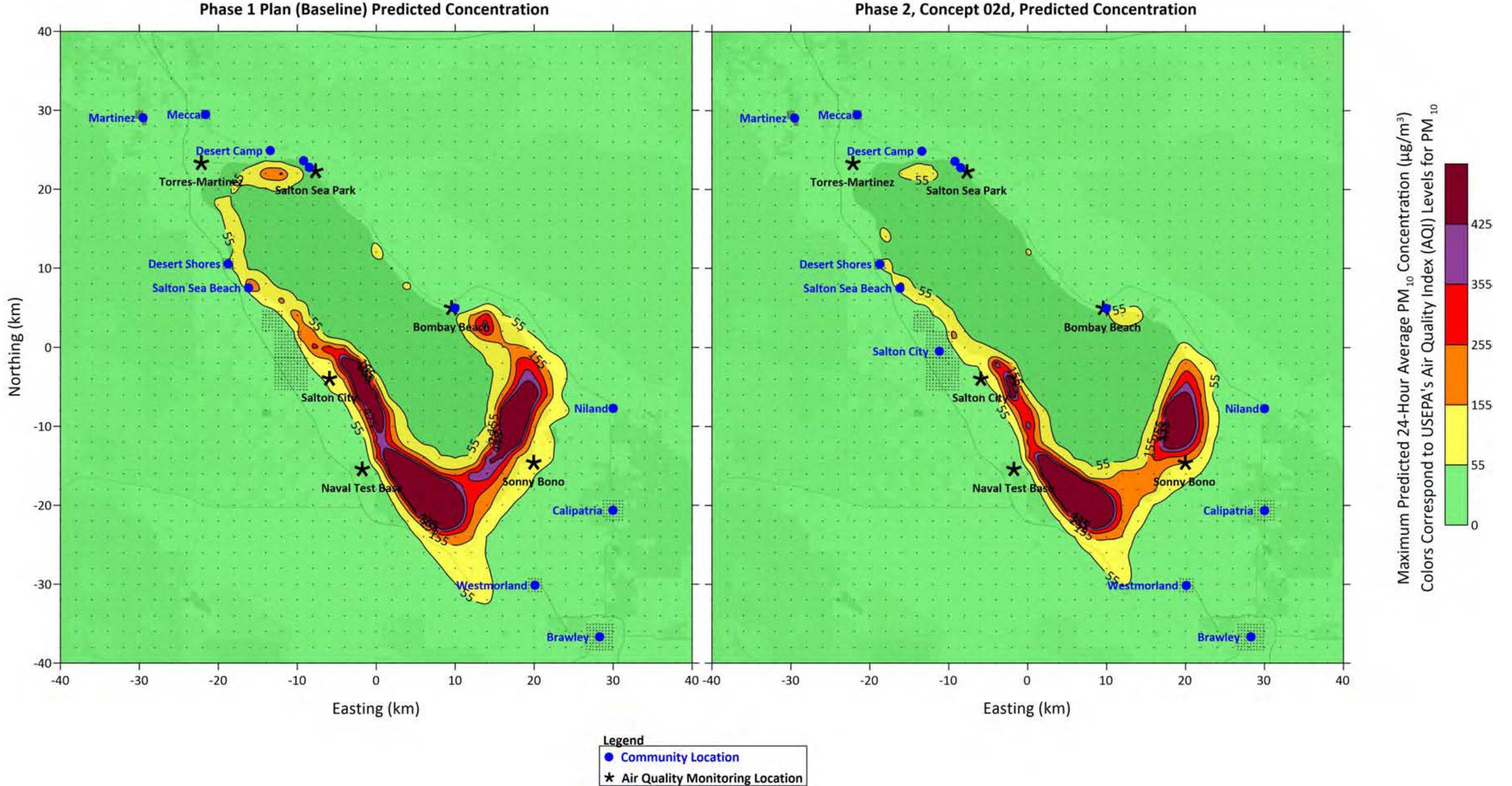
Salton Sea Long Range Plan
CALPUFF Results
Maximum Predicted 24-Hour Average PM_{10} Concentration

Emissions from Exposed Lakebed Only
Restoration Concept Evaluated: Phase 2, Concept 02c
Meteorological Event: November 7, 2020



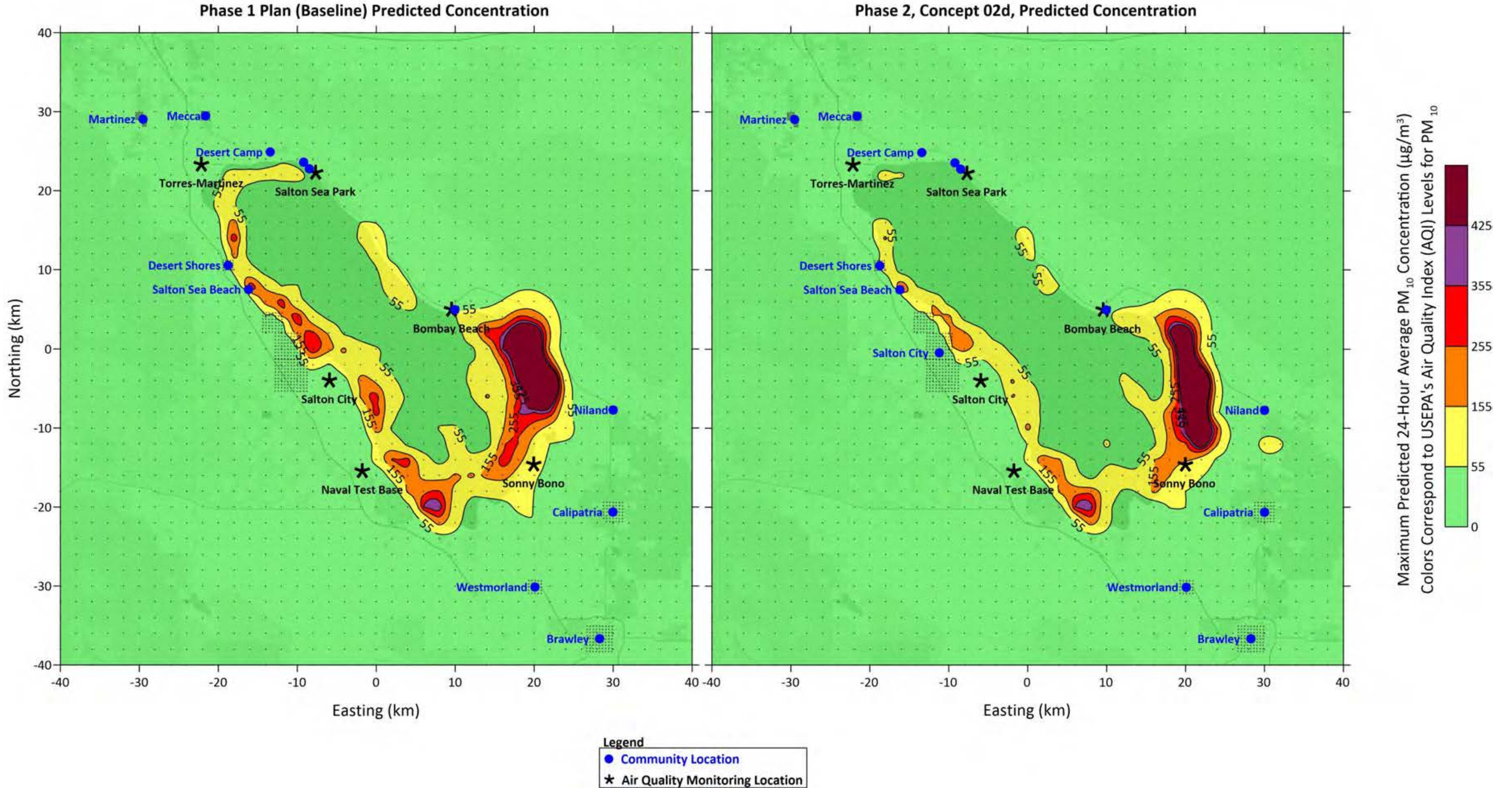
Salton Sea Long Range Plan
CALPUFF Results
Maximum Predicted 24-Hour Average PM_{10} Concentration

Emissions from Exposed Lakebed Only
Restoration Concept Evaluated: Phase 2, Concept 02d
Meteorological Event: January 29, 2020



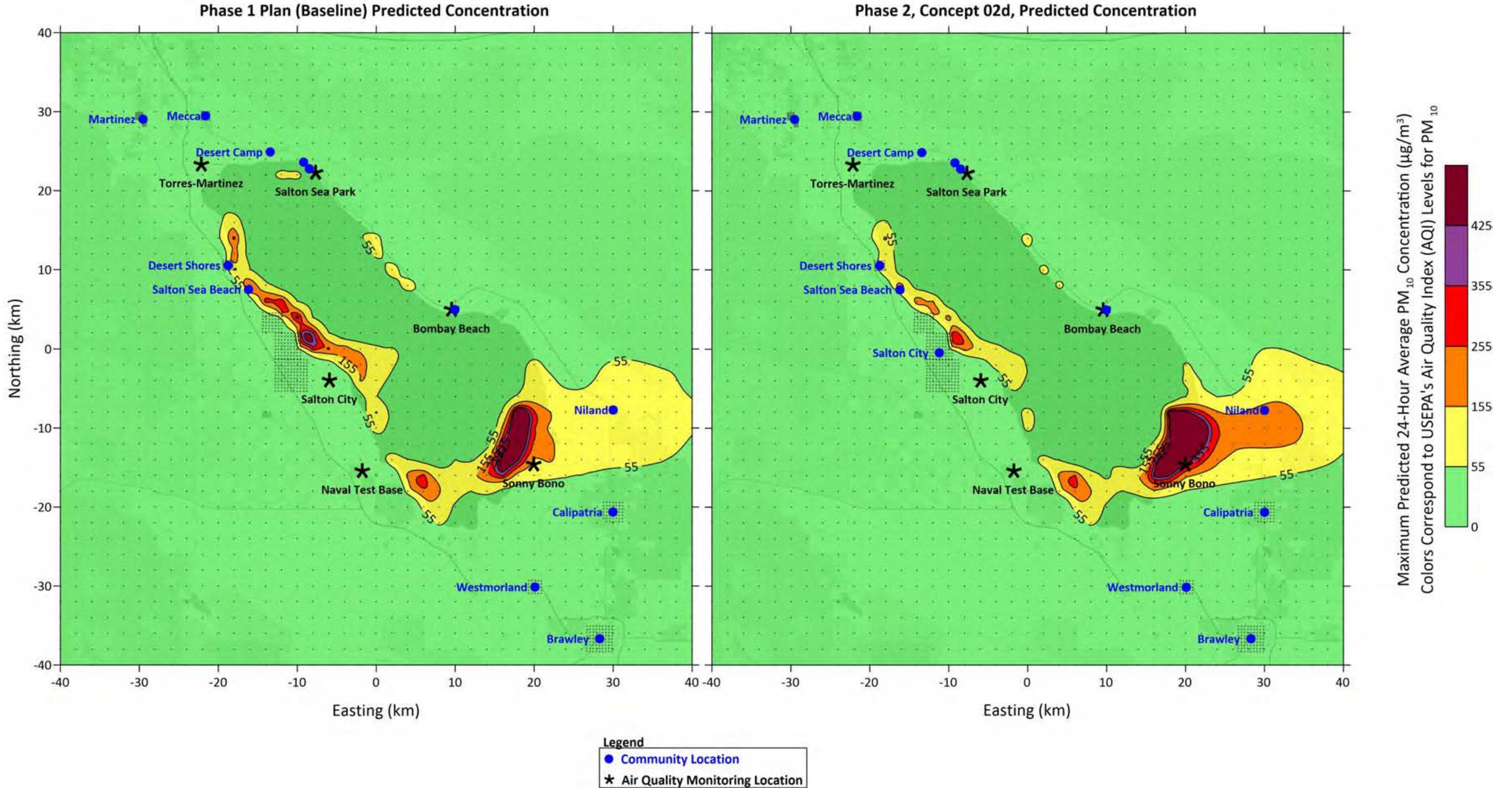
Salton Sea Long Range Plan
CALPUFF Results
Maximum Predicted 24-Hour Average PM_{10} Concentration

Emissions from Exposed Lakebed Only
Restoration Concept Evaluated: Phase 2, Concept 02d
Meteorological Event: March 1, 2020



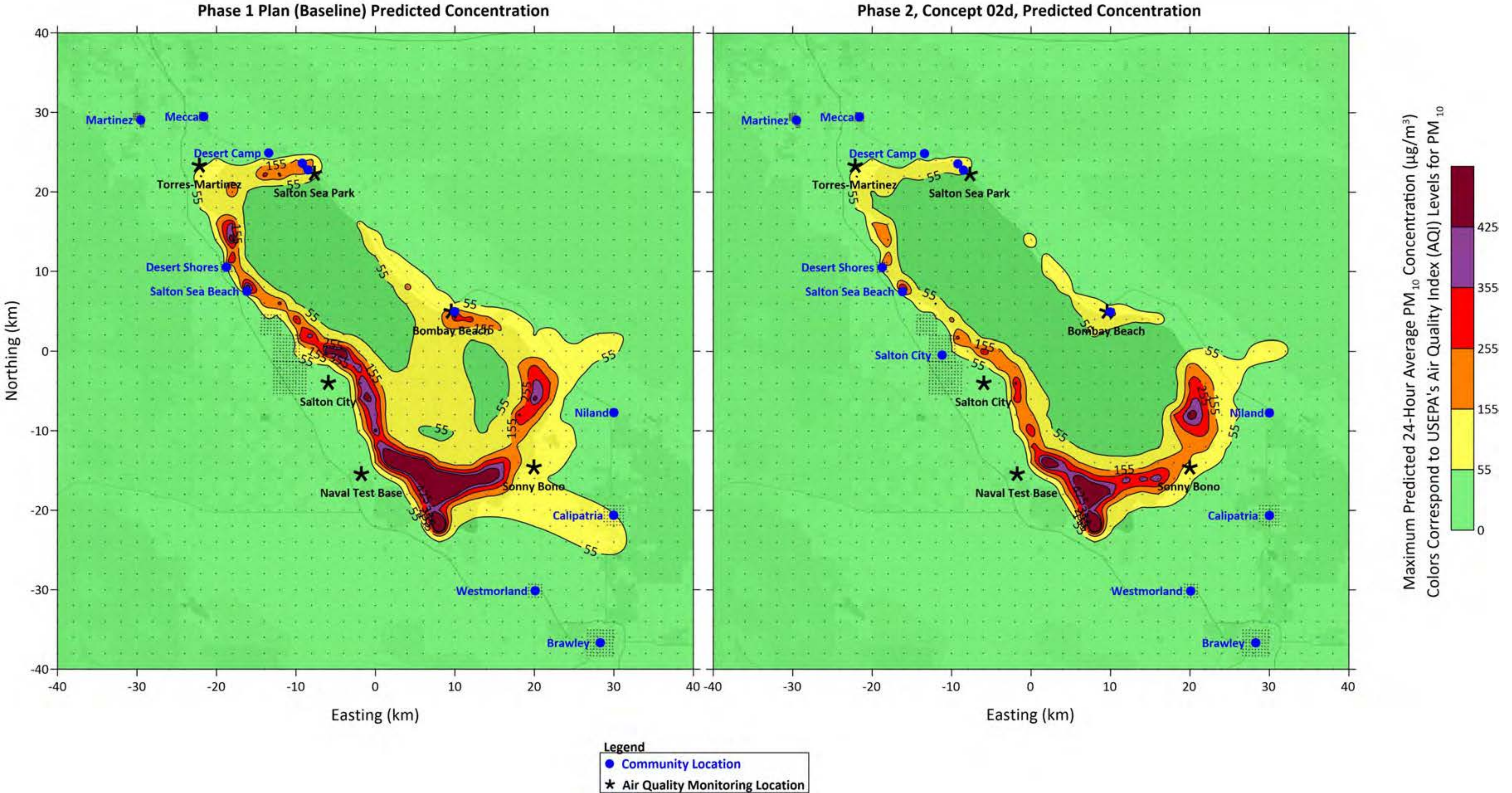
Salton Sea Long Range Plan
CALPUFF Results
Maximum Predicted 24-Hour Average PM_{10} Concentration

Emissions from Exposed Lakebed Only
Restoration Concept Evaluated: Phase 2, Concept 02d
Meteorological Event: June 30, 2020



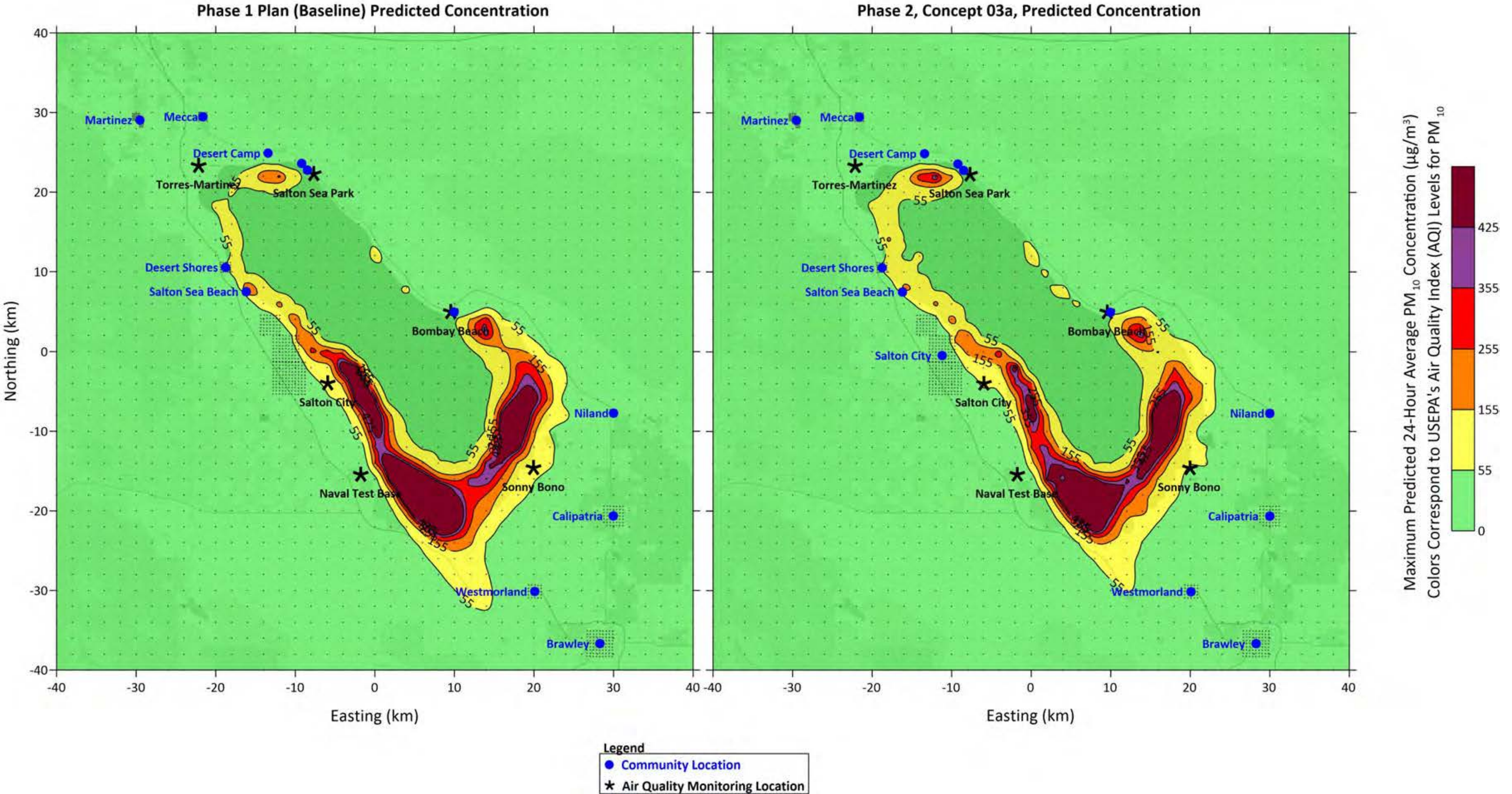
Salton Sea Long Range Plan
CALPUFF Results
Maximum Predicted 24-Hour Average PM_{10} Concentration

Emissions from Exposed Lakebed Only
Restoration Concept Evaluated: Phase 2, Concept 02d
Meteorological Event: November 7, 2020



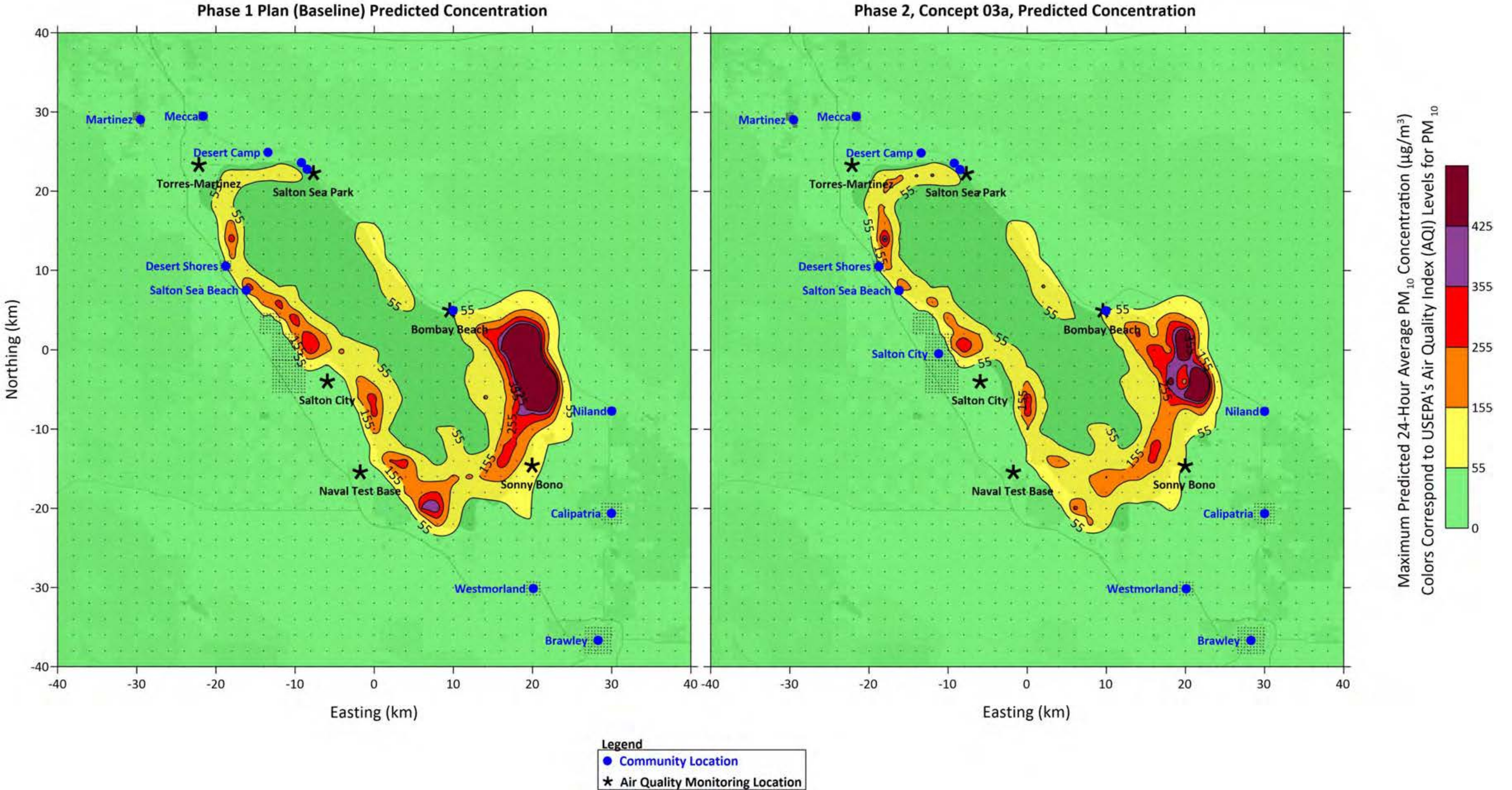
Salton Sea Long Range Plan
CALPUFF Results
Maximum Predicted 24-Hour Average PM_{10} Concentration

Emissions from Exposed Lakebed Only
Restoration Concept Evaluated: Phase 2, Concept 03a
Meteorological Event: January 29, 2020



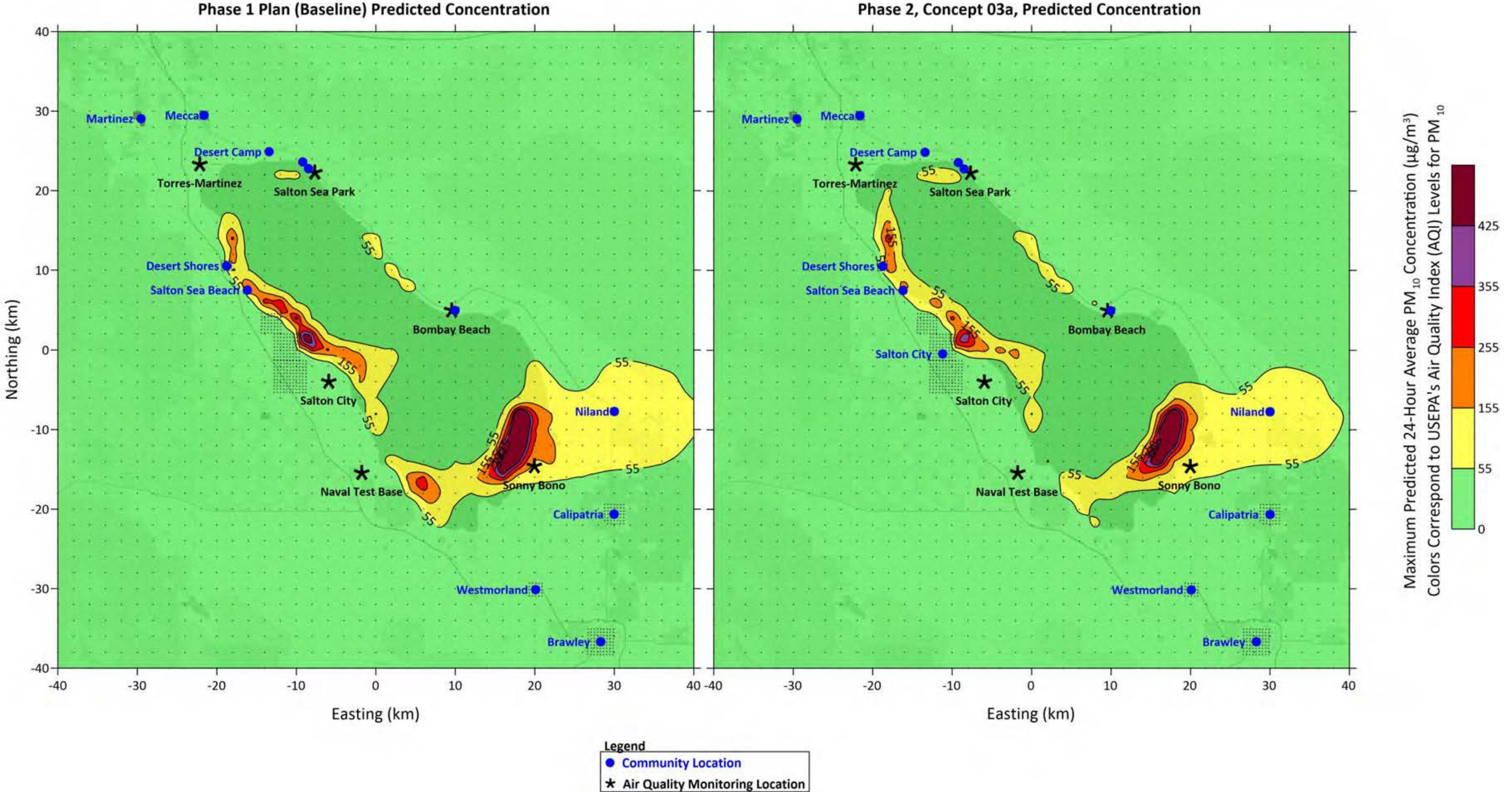
Salton Sea Long Range Plan
CALPUFF Results
Maximum Predicted 24-Hour Average PM_{10} Concentration

Emissions from Exposed Lakebed Only
Restoration Concept Evaluated: Phase 2, Concept 03a
Meteorological Event: March 1, 2020



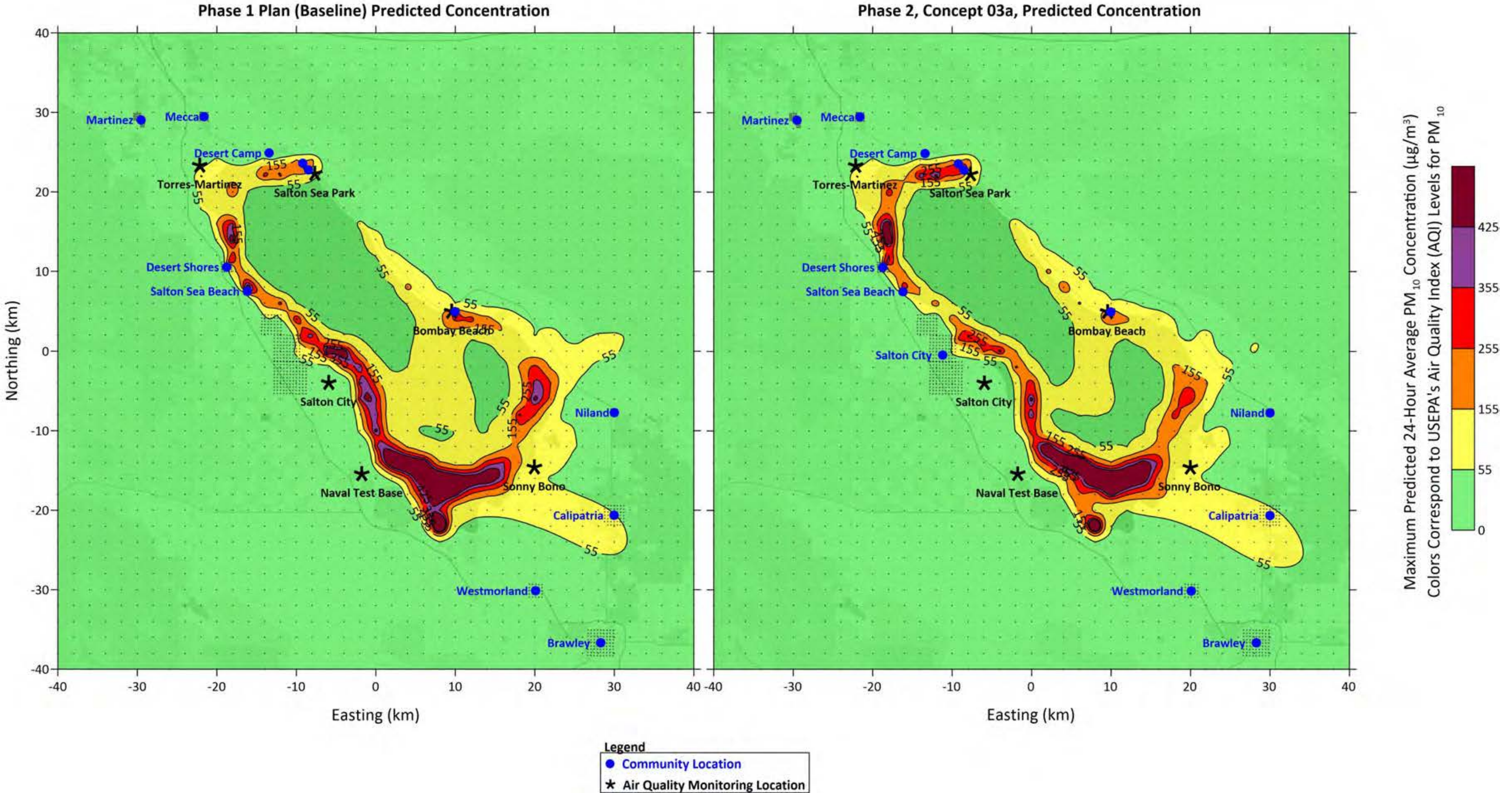
Salton Sea Long Range Plan
CALPUFF Results
Maximum Predicted 24-Hour Average PM_{10} Concentration

Emissions from Exposed Lakebed Only
Restoration Concept Evaluated: Phase 2, Concept 03a
Meteorological Event: June 30, 2020



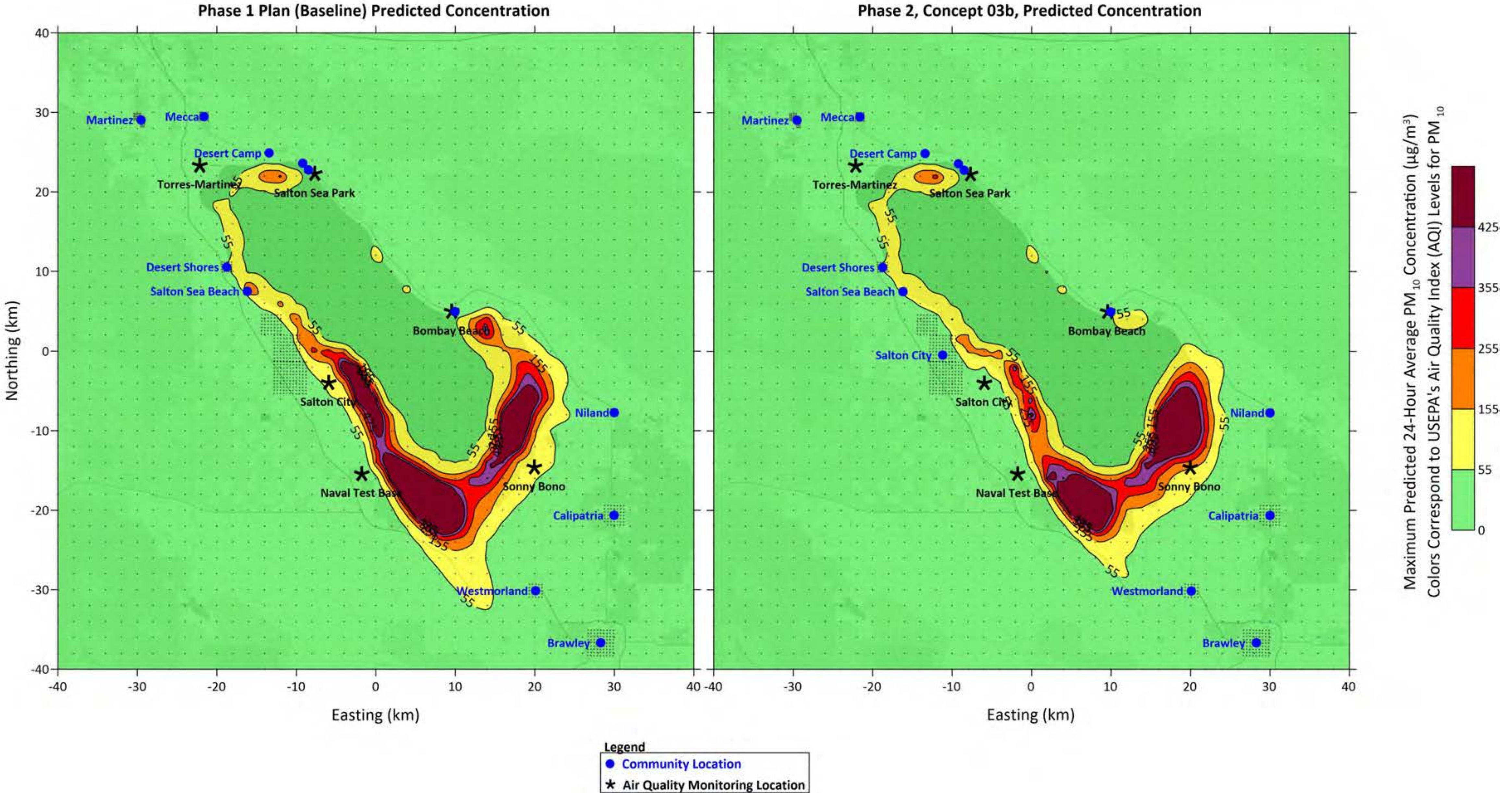
Salton Sea Long Range Plan
CALPUFF Results
Maximum Predicted 24-Hour Average PM_{10} Concentration

Emissions from Exposed Lakebed Only
Restoration Concept Evaluated: Phase 2, Concept 03a
Meteorological Event: November 7, 2020



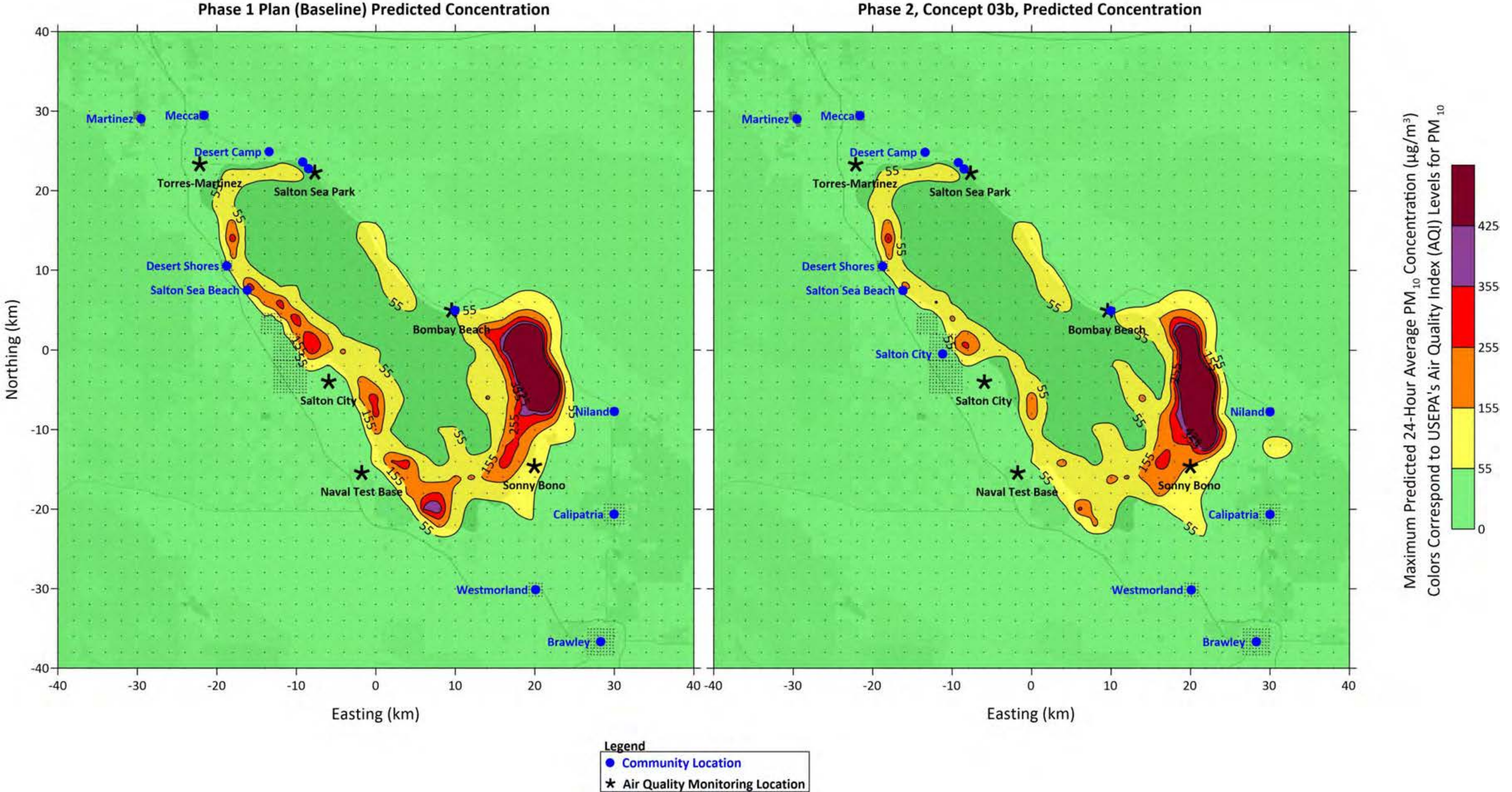
Salton Sea Long Range Plan
CALPUFF Results
Maximum Predicted 24-Hour Average PM_{10} Concentration

Emissions from Exposed Lakebed Only
Restoration Concept Evaluated: Phase 2, Concept 03b
Meteorological Event: January 29, 2020



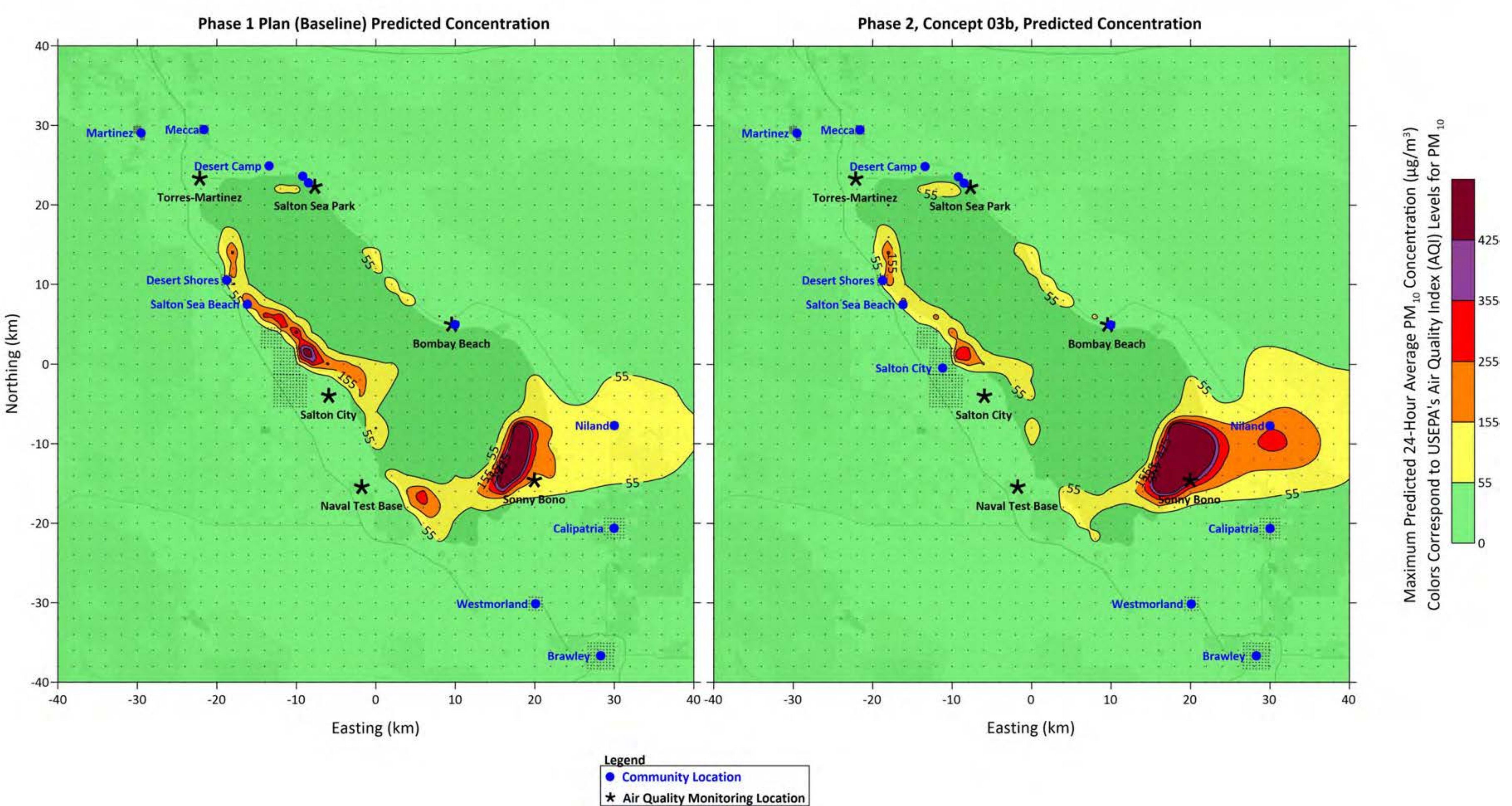
Salton Sea Long Range Plan
CALPUFF Results
Maximum Predicted 24-Hour Average PM_{10} Concentration

Emissions from Exposed Lakebed Only
Restoration Concept Evaluated: Phase 2, Concept 03b
Meteorological Event: March 1, 2020



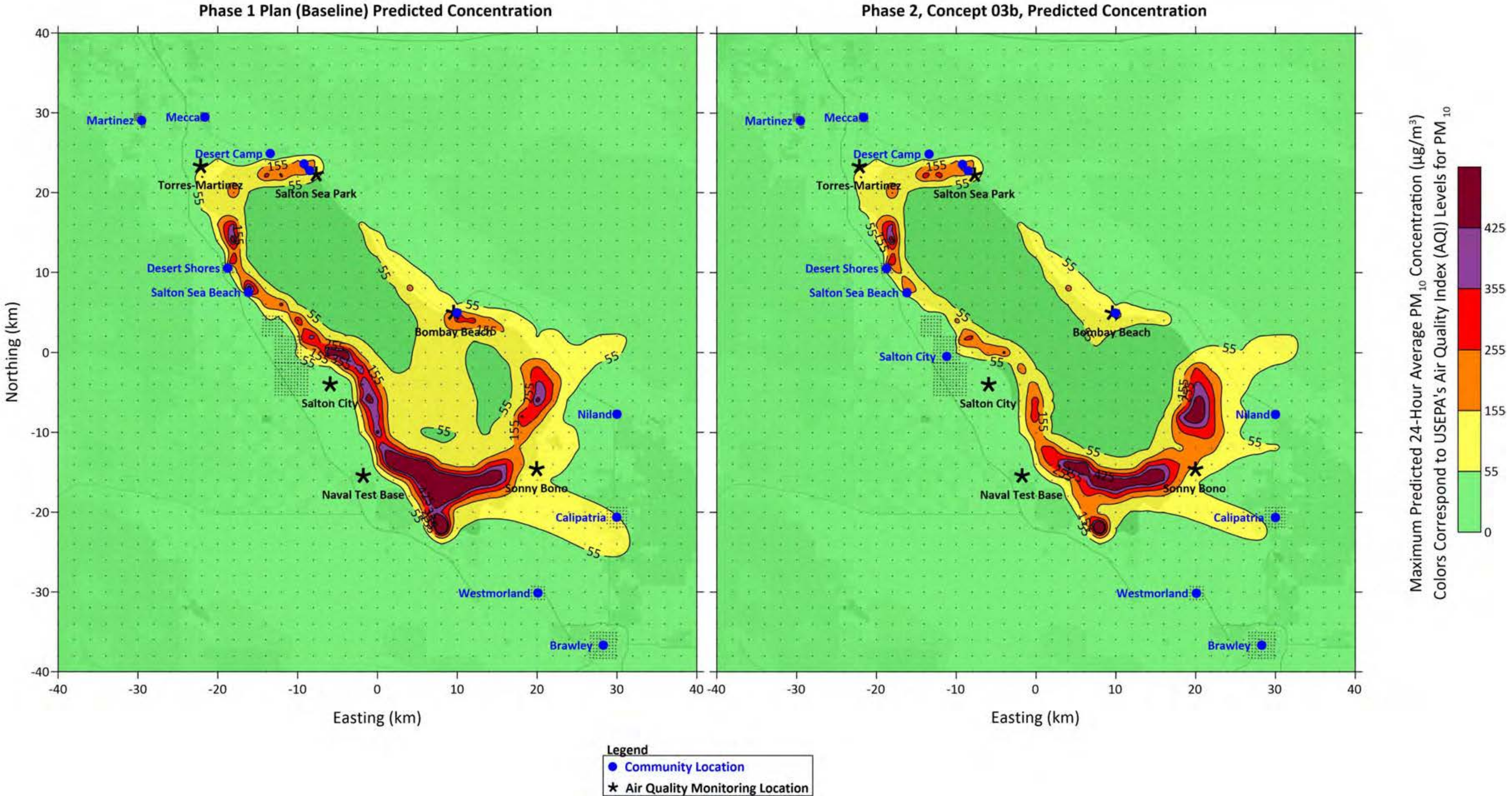
Salton Sea Long Range Plan
CALPUFF Results
Maximum Predicted 24-Hour Average PM_{10} Concentration

Emissions from Exposed Lakebed Only
Restoration Concept Evaluated: Phase 2, Concept 03b
Meteorological Event: June 30, 2020



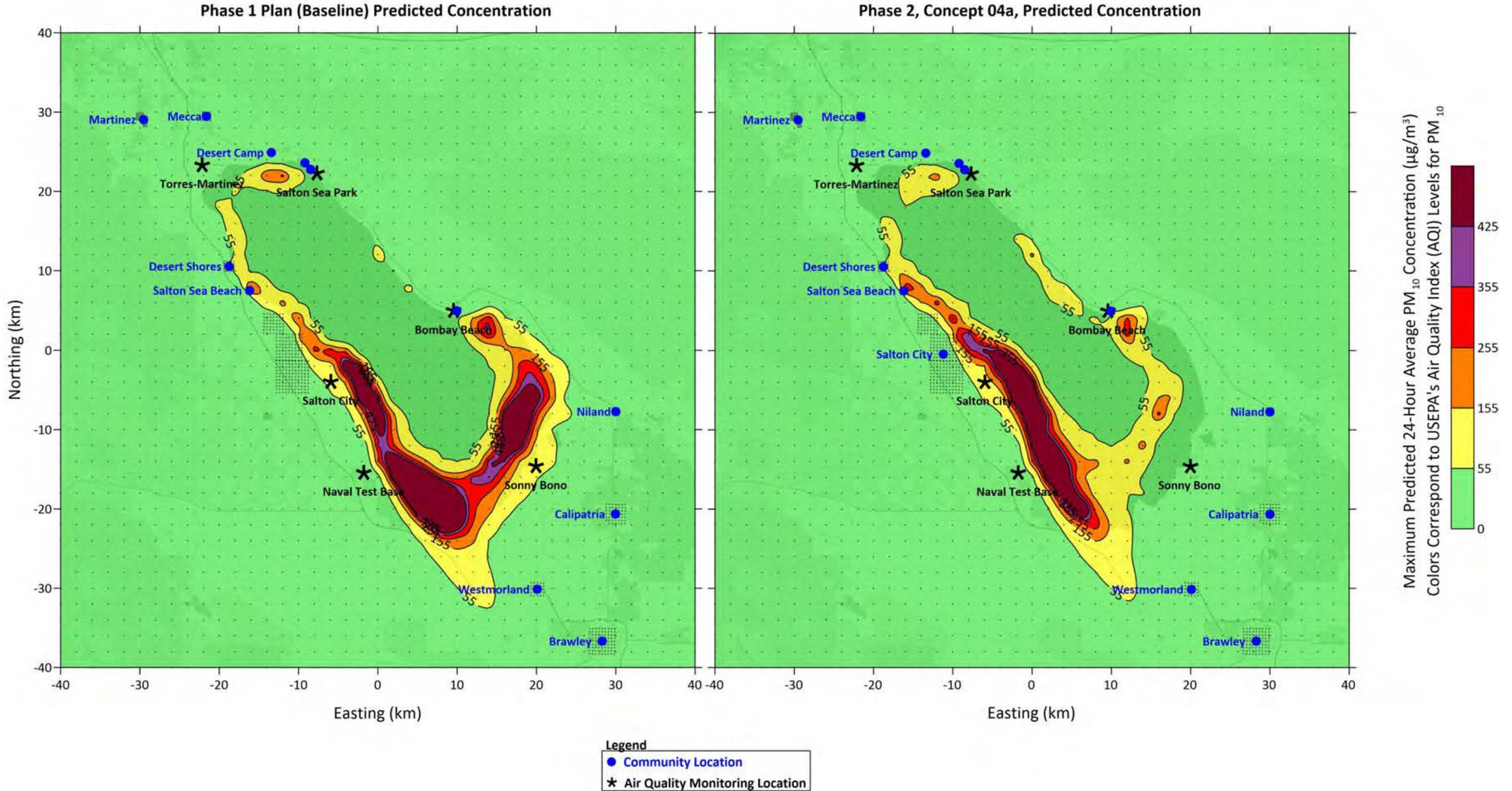
Salton Sea Long Range Plan
CALPUFF Results
Maximum Predicted 24-Hour Average PM_{10} Concentration

Emissions from Exposed Lakebed Only
Restoration Concept Evaluated: Phase 2, Concept 03b
Meteorological Event: November 7, 2020



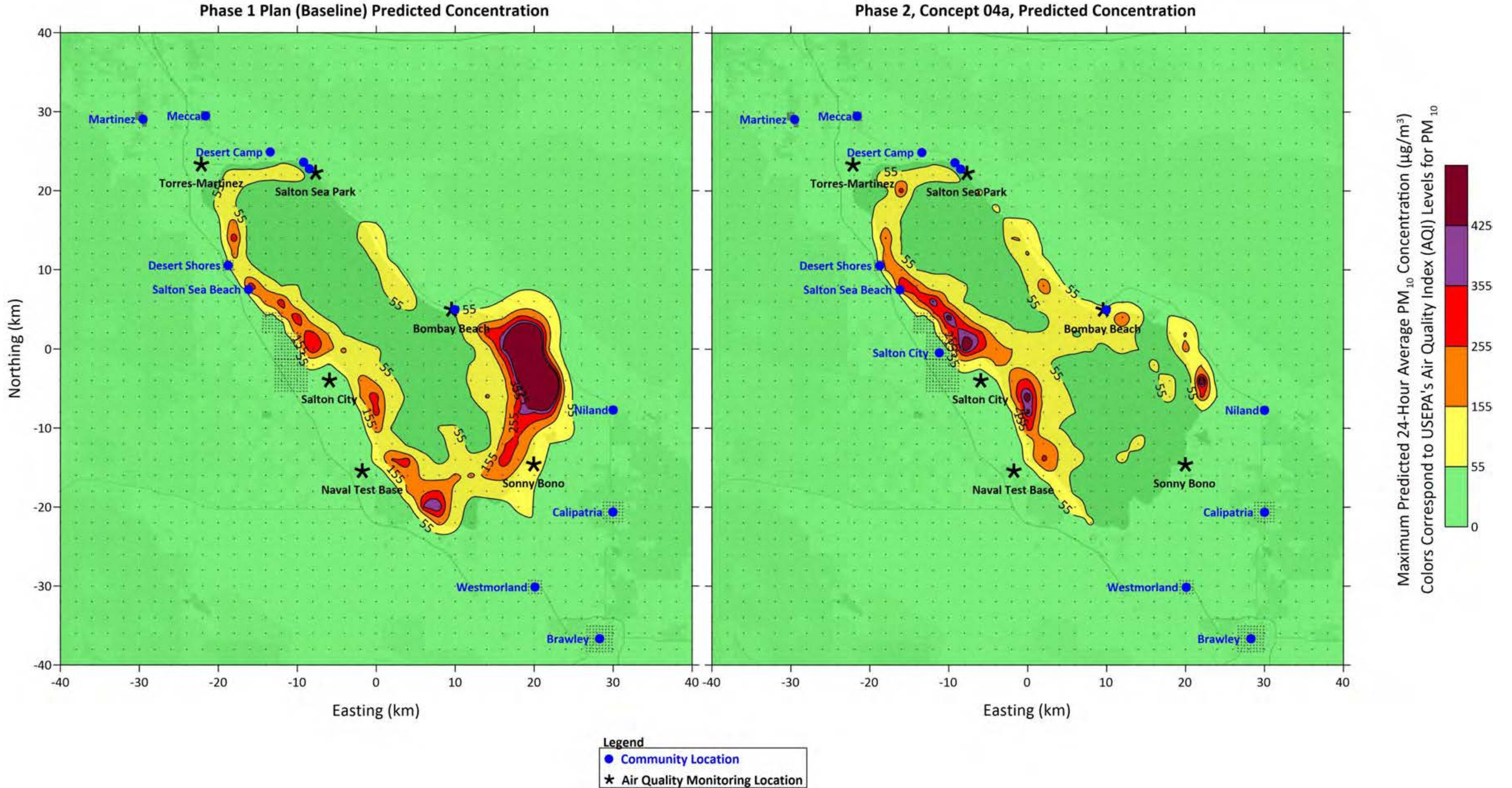
Salton Sea Long Range Plan
CALPUFF Results
Maximum Predicted 24-Hour Average PM_{10} Concentration

Emissions from Exposed Lakebed Only
Restoration Concept Evaluated: Phase 2, Concept 04a
Meteorological Event: January 29, 2020



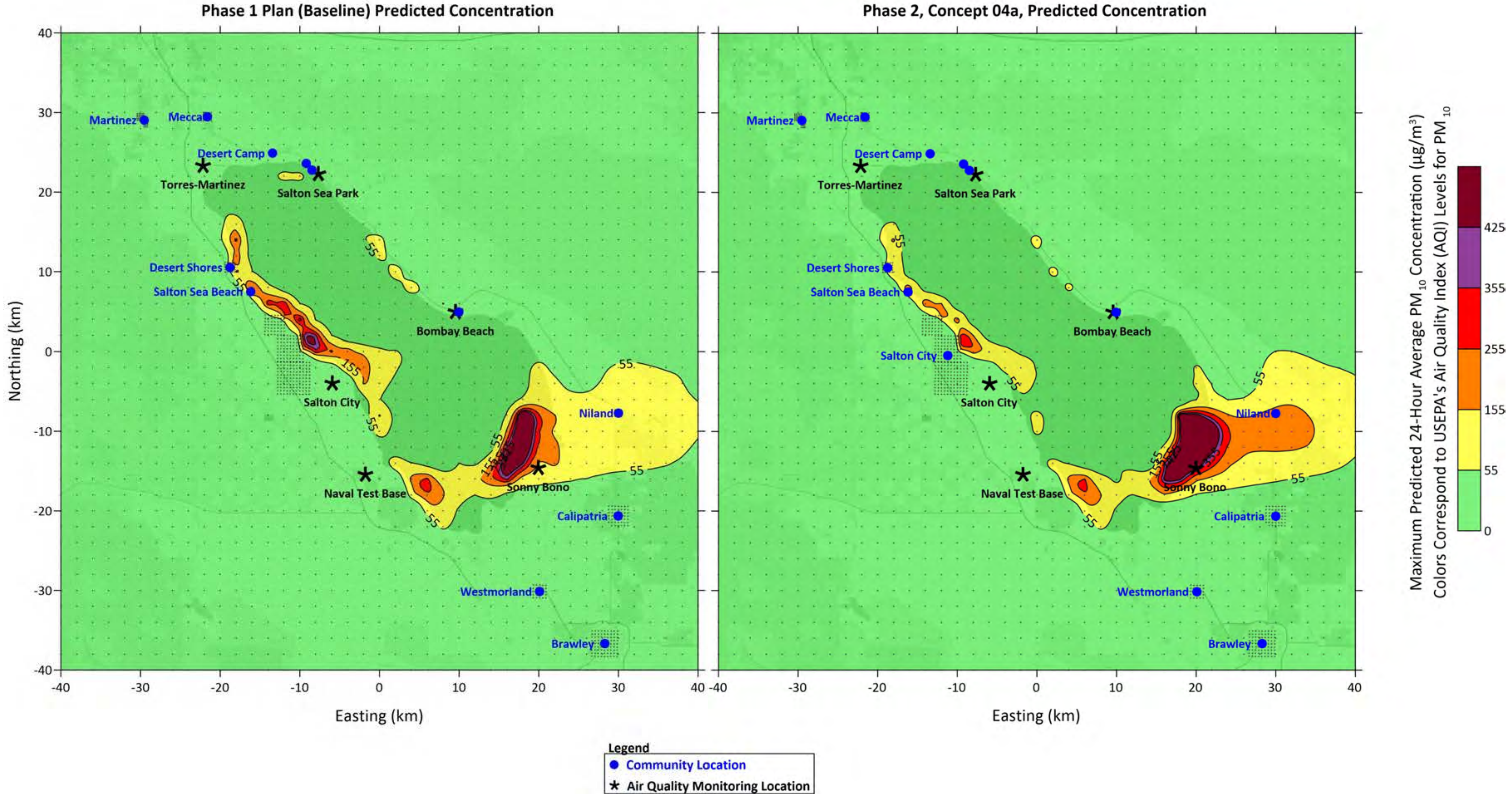
Salton Sea Long Range Plan
CALPUFF Results
Maximum Predicted 24-Hour Average PM_{10} Concentration

Emissions from Exposed Lakebed Only
Restoration Concept Evaluated: Phase 2, Concept 04a
Meteorological Event: March 1, 2020



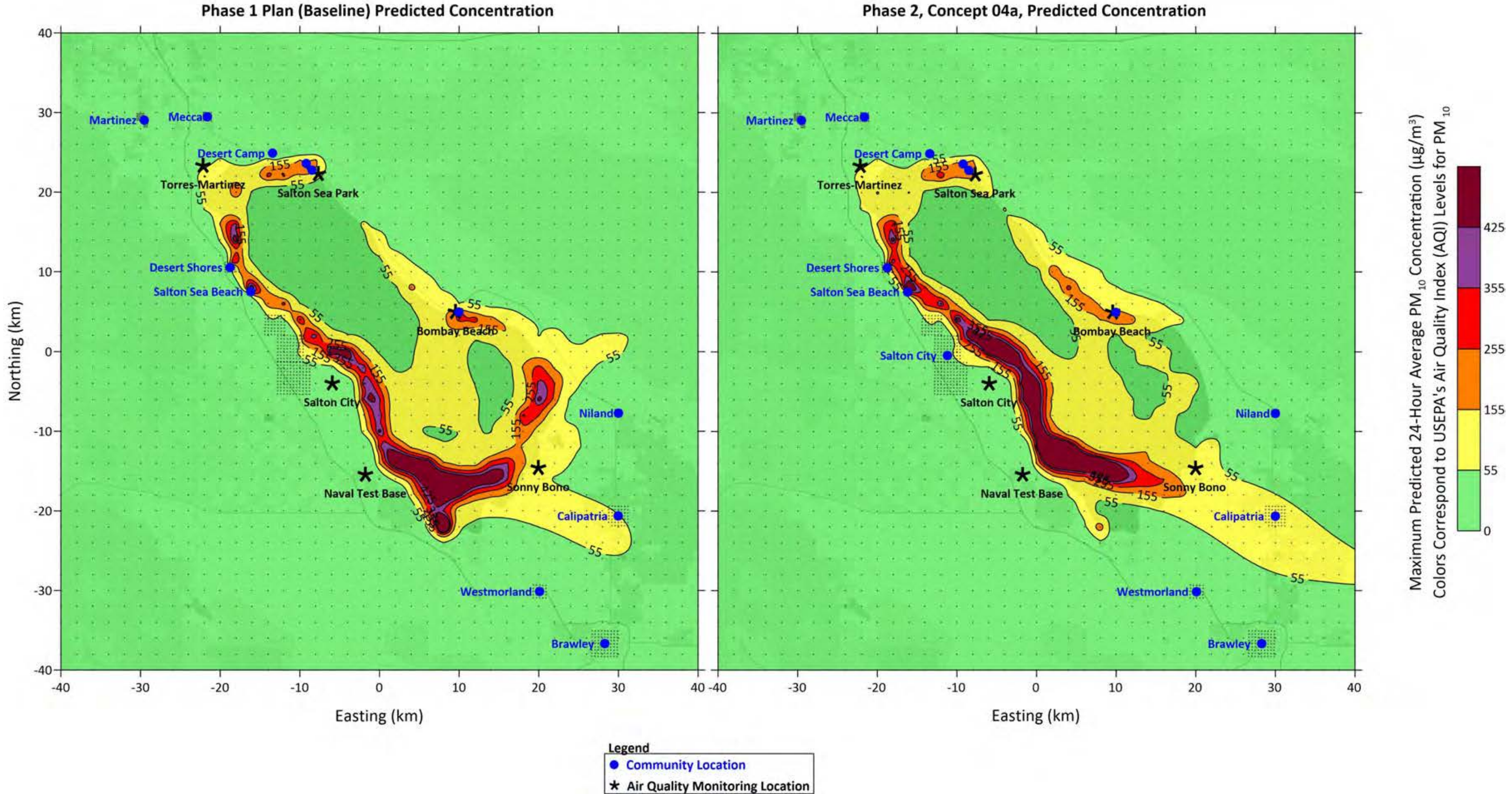
Salton Sea Long Range Plan
CALPUFF Results
Maximum Predicted 24-Hour Average PM_{10} Concentration

Emissions from Exposed Lakebed Only
Restoration Concept Evaluated: Phase 2, Concept 04a
Meteorological Event: June 30, 2020



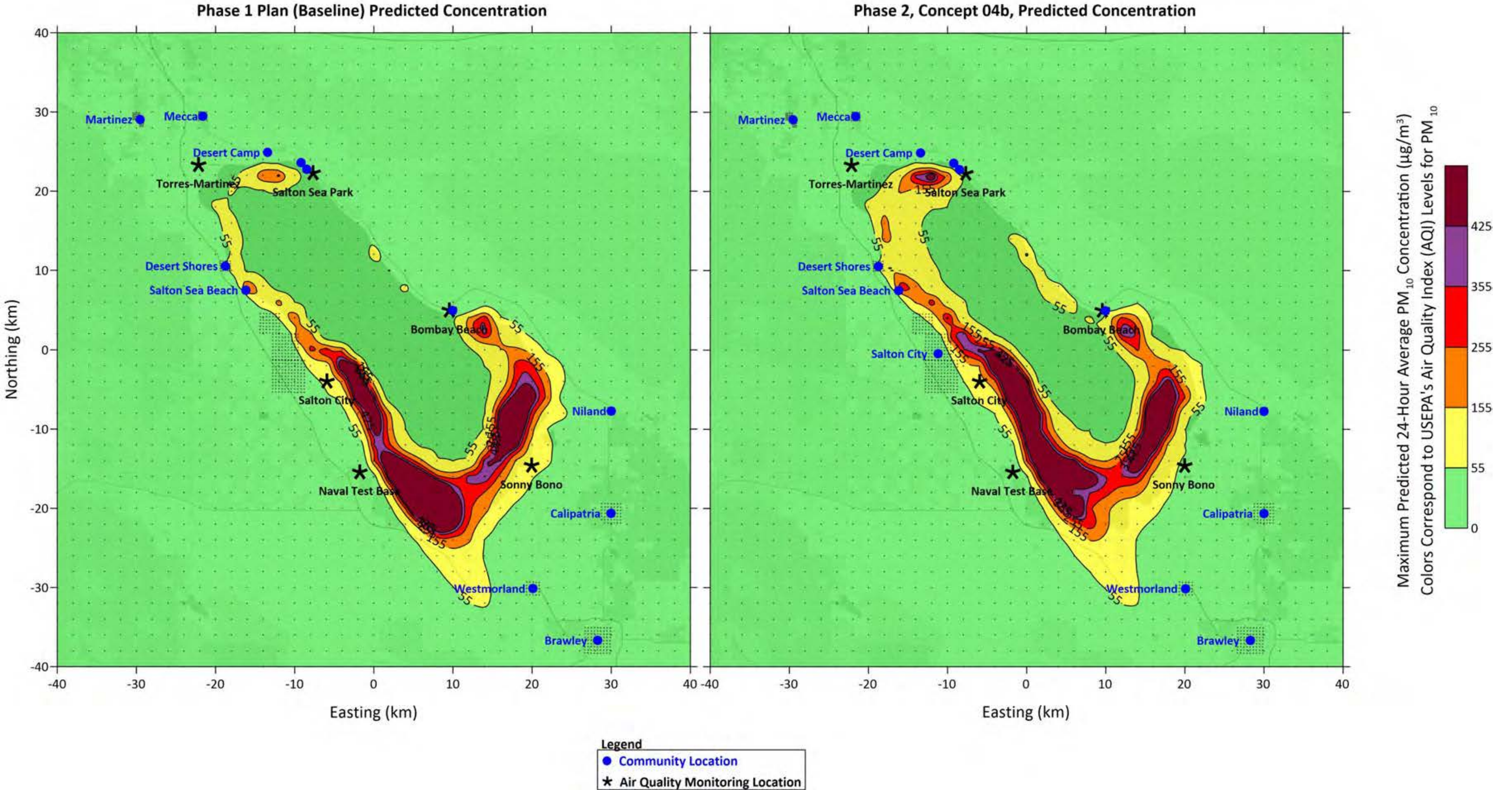
Salton Sea Long Range Plan
CALPUFF Results
Maximum Predicted 24-Hour Average PM_{10} Concentration

Emissions from Exposed Lakebed Only
Restoration Concept Evaluated: Phase 2, Concept 04a
Meteorological Event: November 7, 2020



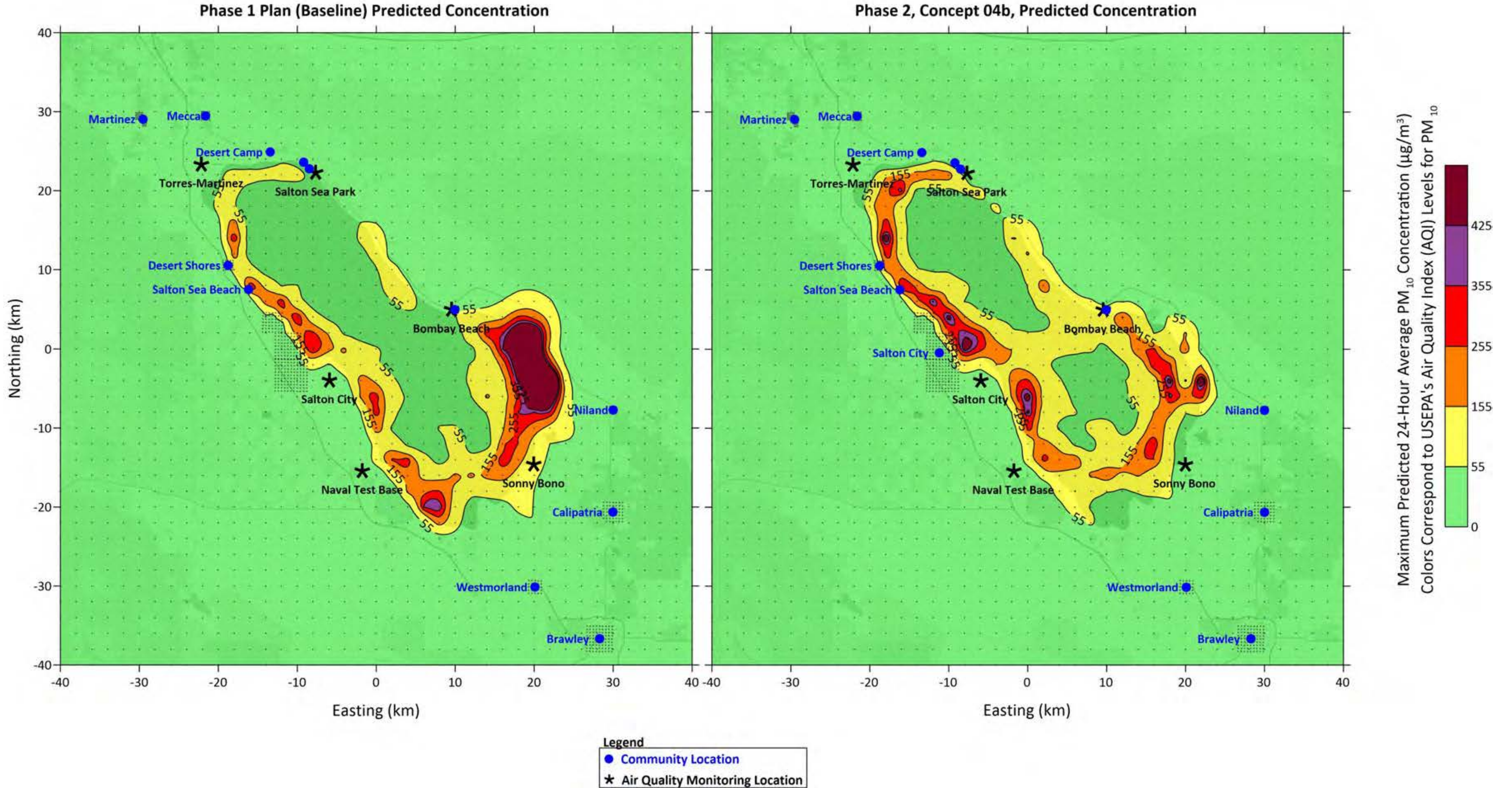
Salton Sea Long Range Plan
CALPUFF Results
Maximum Predicted 24-Hour Average PM_{10} Concentration

Emissions from Exposed Lakebed Only
Restoration Concept Evaluated: Phase 2, Concept 04b
Meteorological Event: January 29, 2020



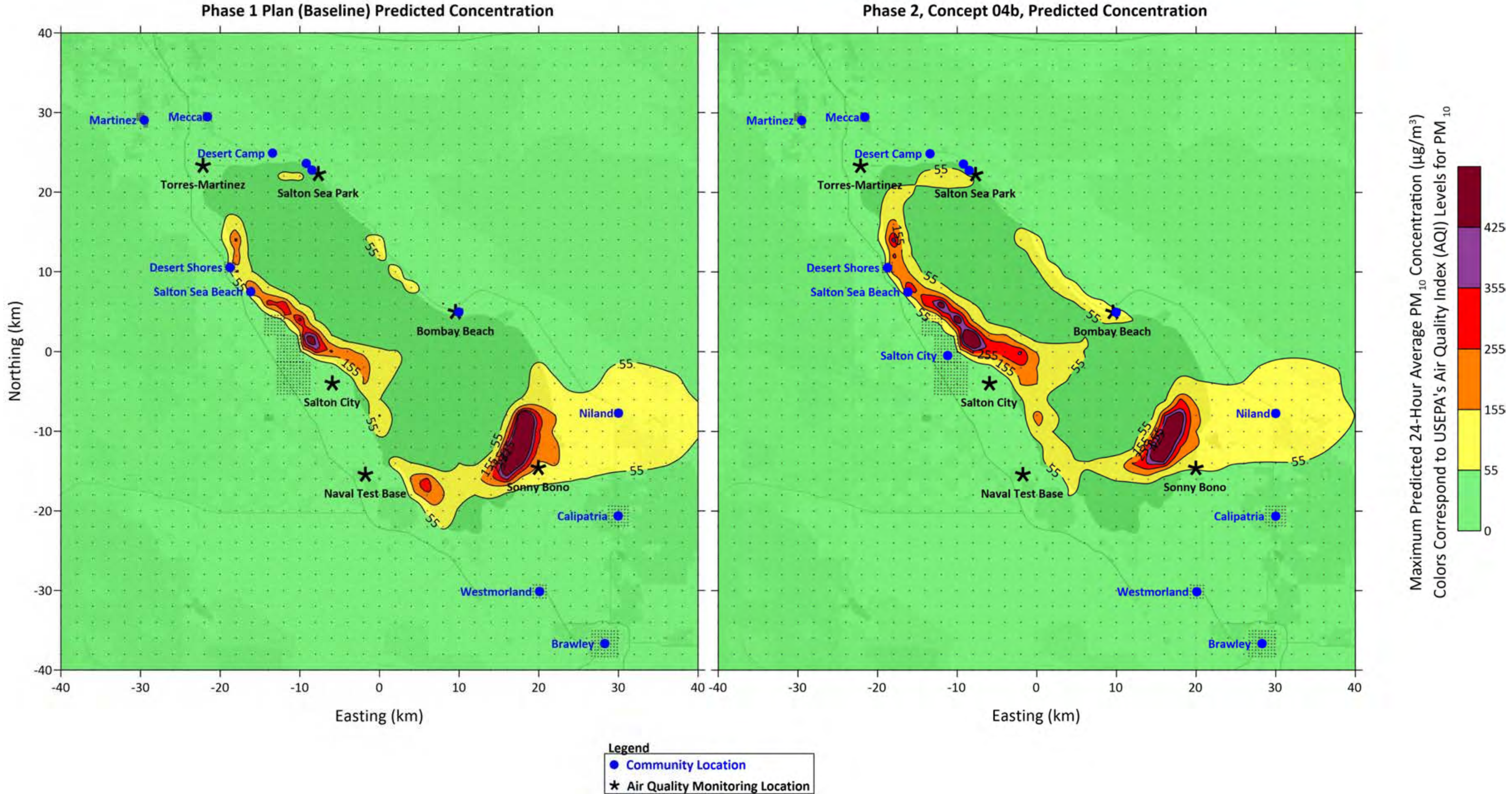
Salton Sea Long Range Plan
CALPUFF Results
Maximum Predicted 24-Hour Average PM_{10} Concentration

Emissions from Exposed Lakebed Only
Restoration Concept Evaluated: Phase 2, Concept 04b
Meteorological Event: March 1, 2020



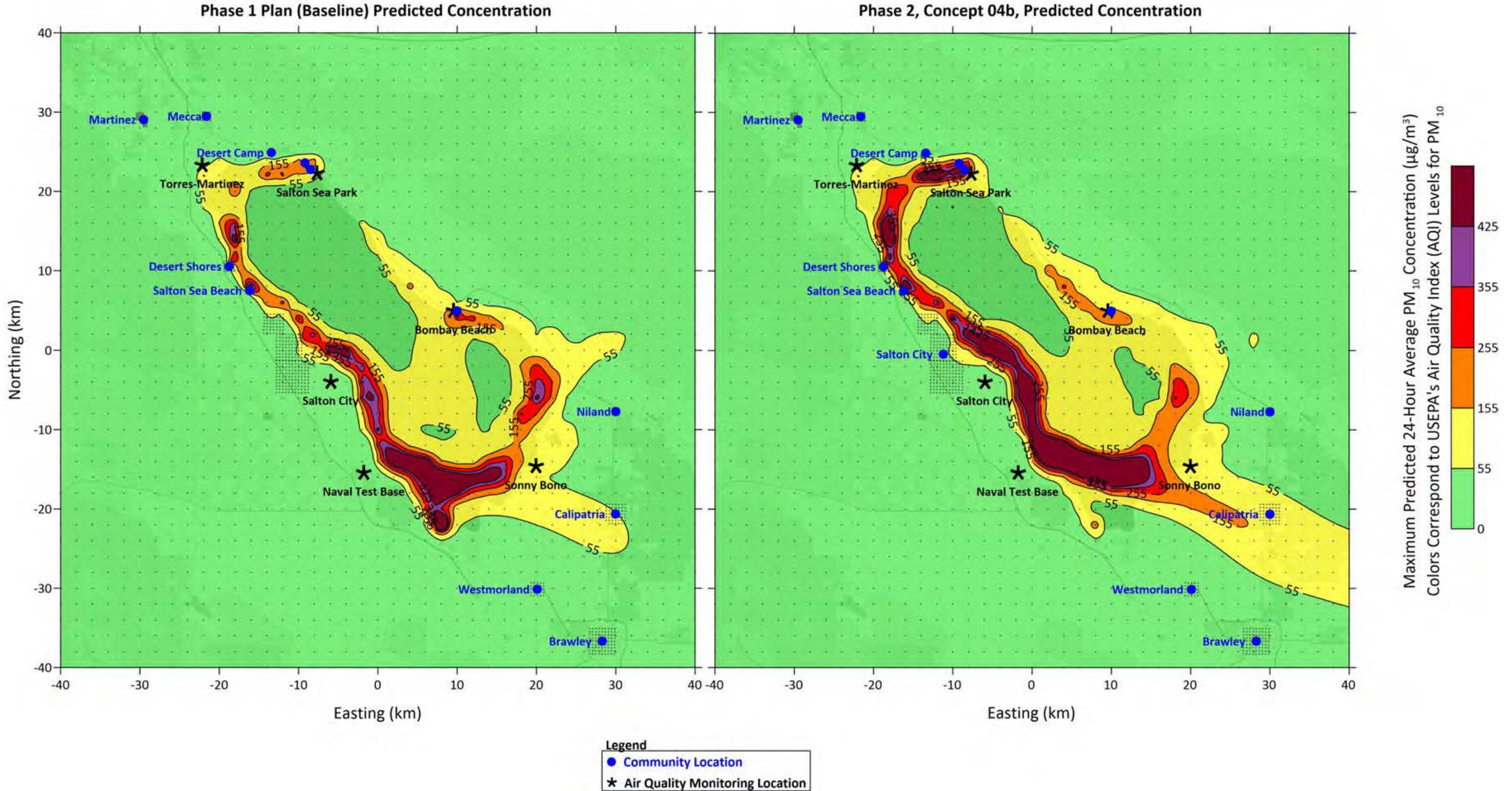
Salton Sea Long Range Plan
CALPUFF Results
Maximum Predicted 24-Hour Average PM_{10} Concentration

Emissions from Exposed Lakebed Only
Restoration Concept Evaluated: Phase 2, Concept 04b
Meteorological Event: June 30, 2020



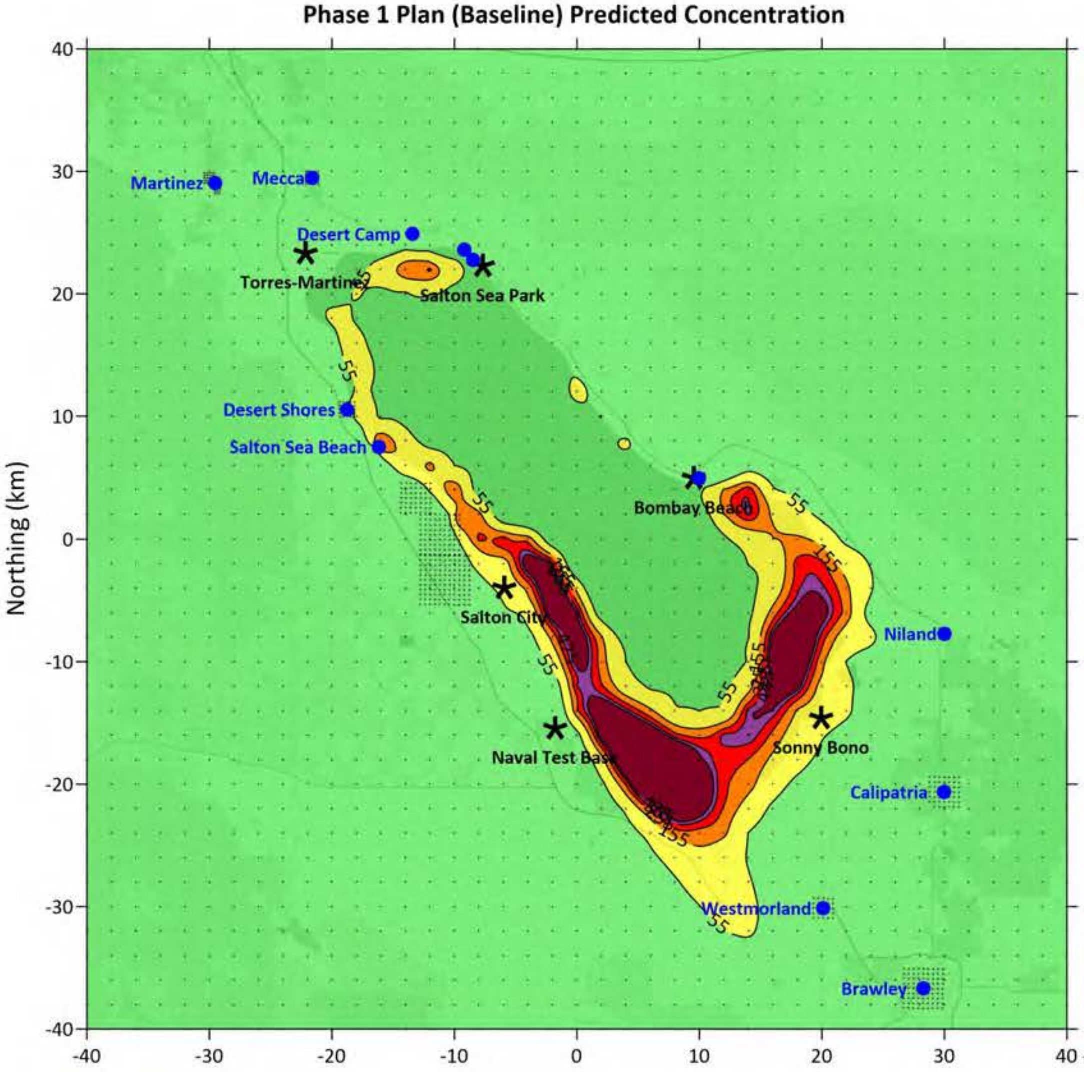
Salton Sea Long Range Plan
CALPUFF Results
Maximum Predicted 24-Hour Average PM_{10} Concentration

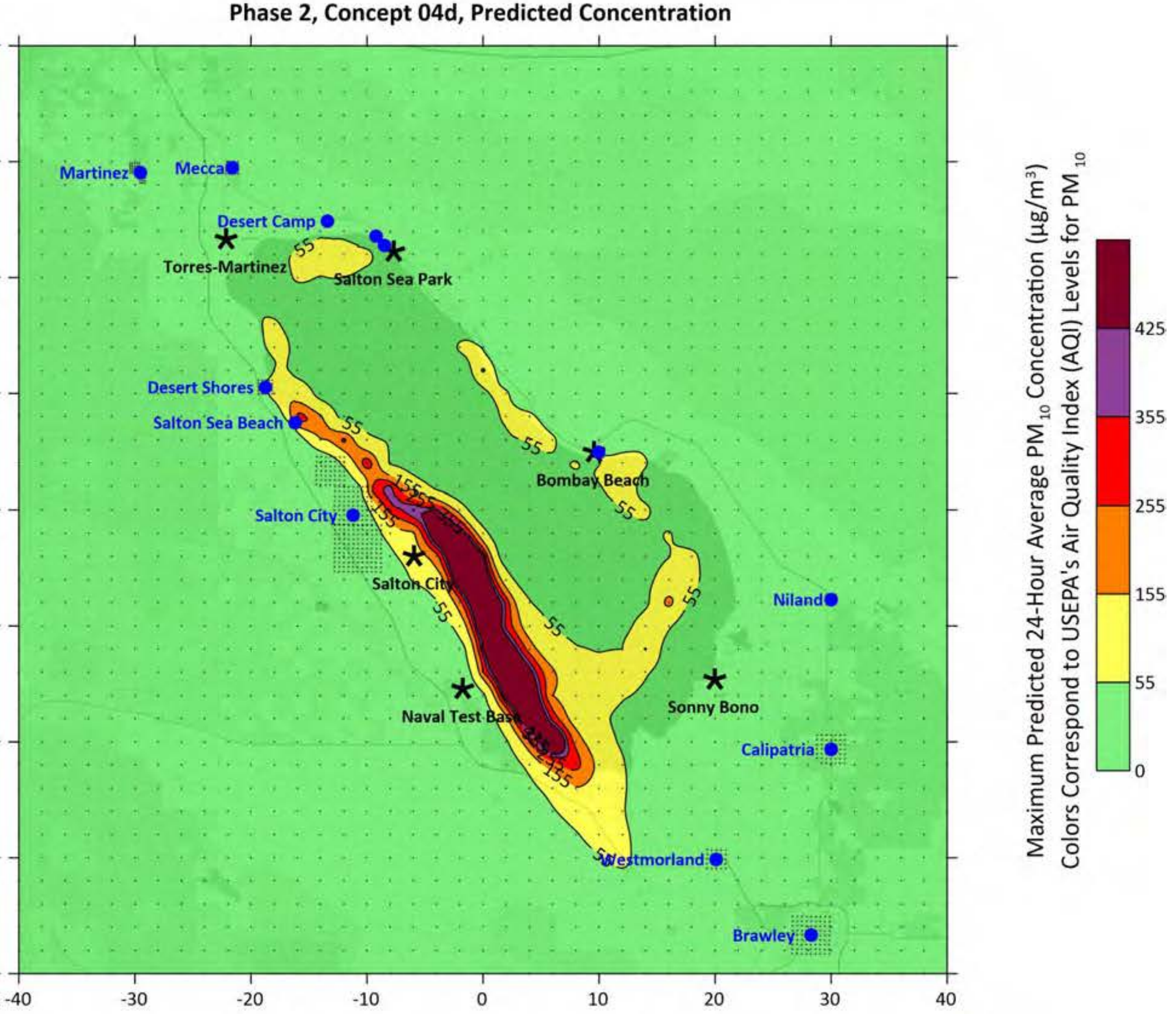
Emissions from Exposed Lakebed Only
Restoration Concept Evaluated: Phase 2, Concept 04b
Meteorological Event: November 7, 2020



Salton Sea Long Range Plan
CALPUFF Results
Maximum Predicted 24-Hour Average PM_{10} Concentration

Emissions from Exposed Lakebed Only
Restoration Concept Evaluated: Phase 2, Concept 04d
Meteorological Event: January 29, 2020

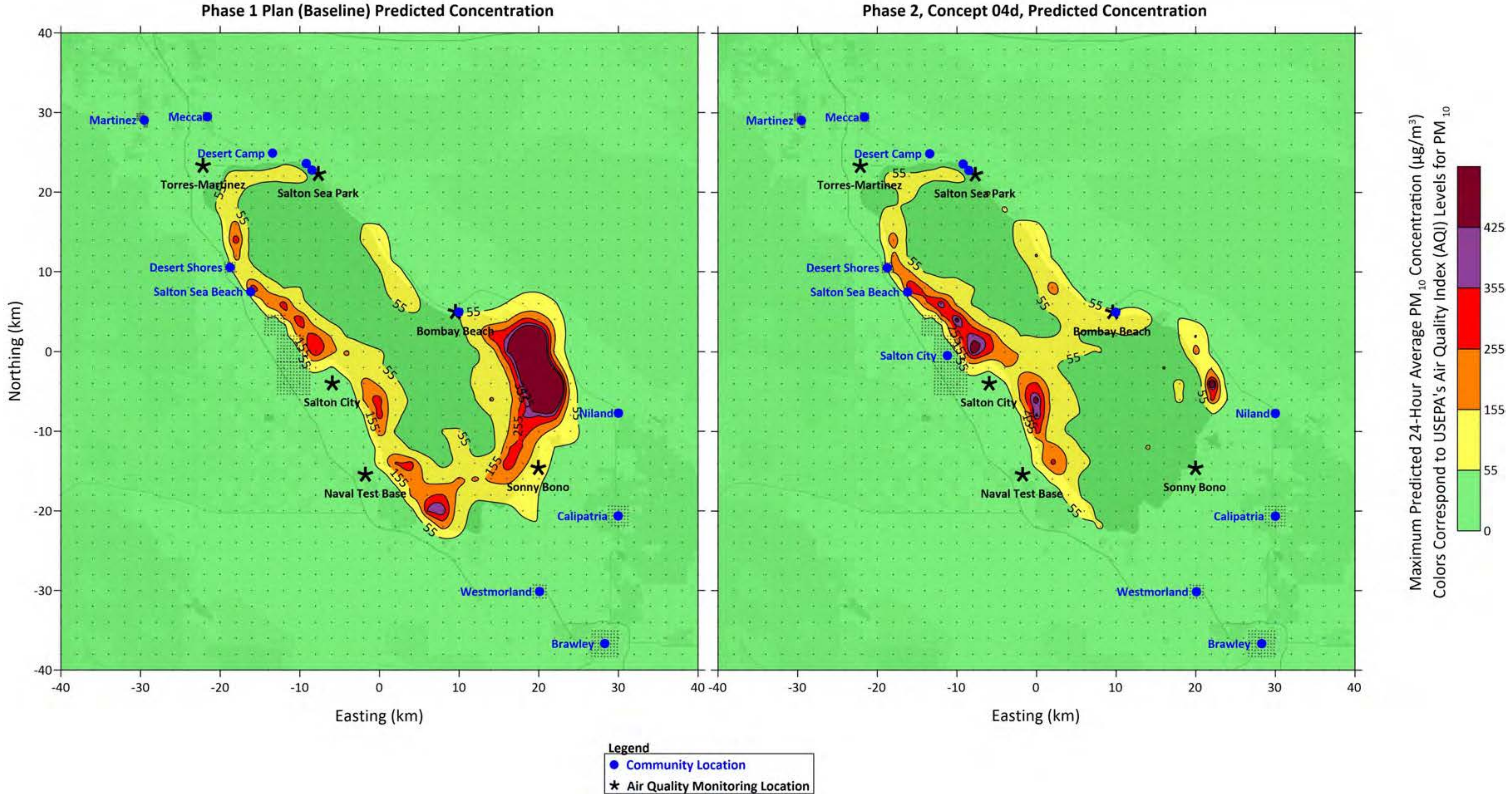




Legend
- Community Location
- Air Quality Monitoring Location

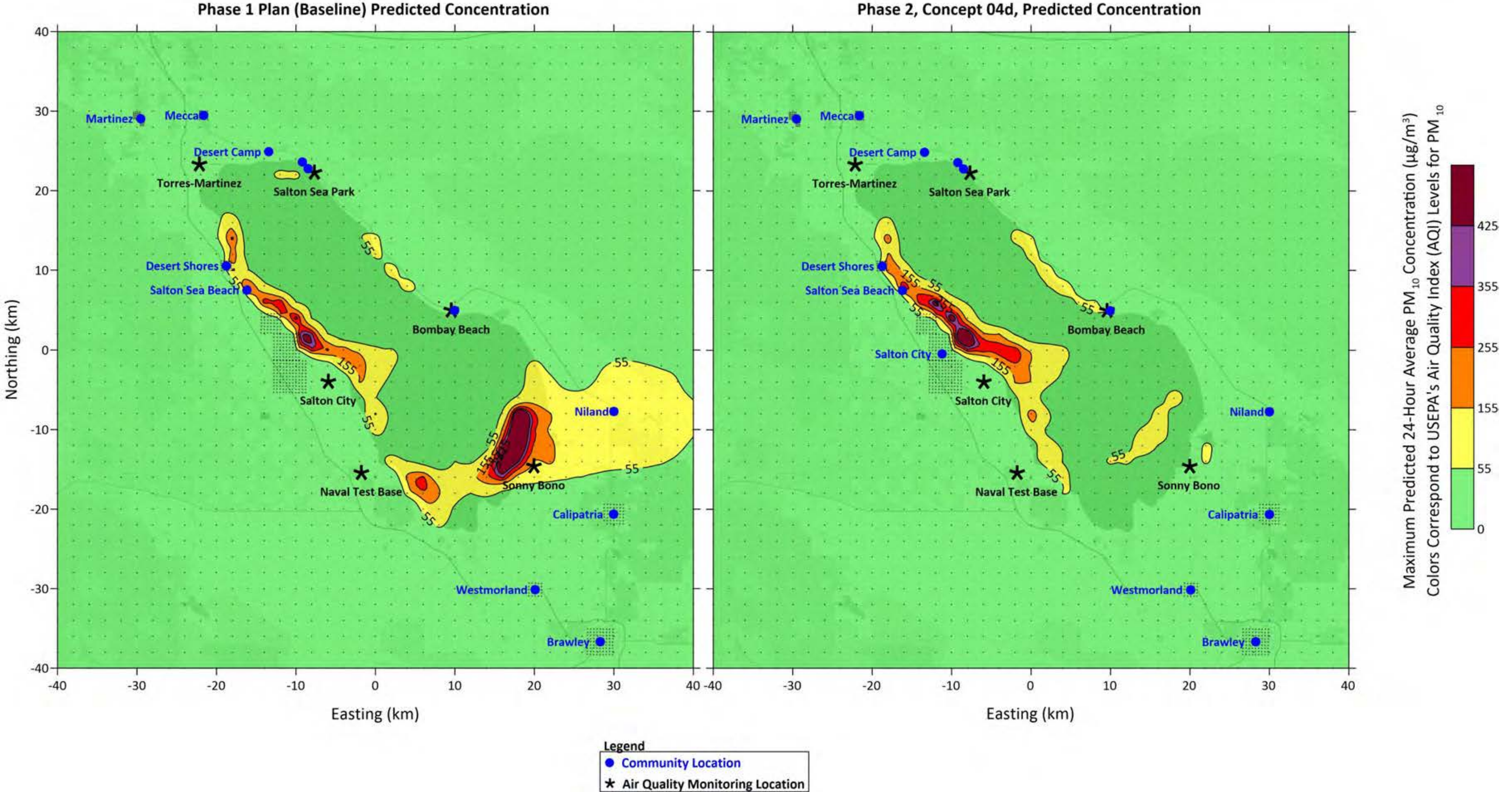
Salton Sea Long Range Plan
CALPUFF Results
Maximum Predicted 24-Hour Average PM_{10} Concentration

Emissions from Exposed Lakebed Only
Restoration Concept Evaluated: Phase 2, Concept 04d
Meteorological Event: March 1, 2020



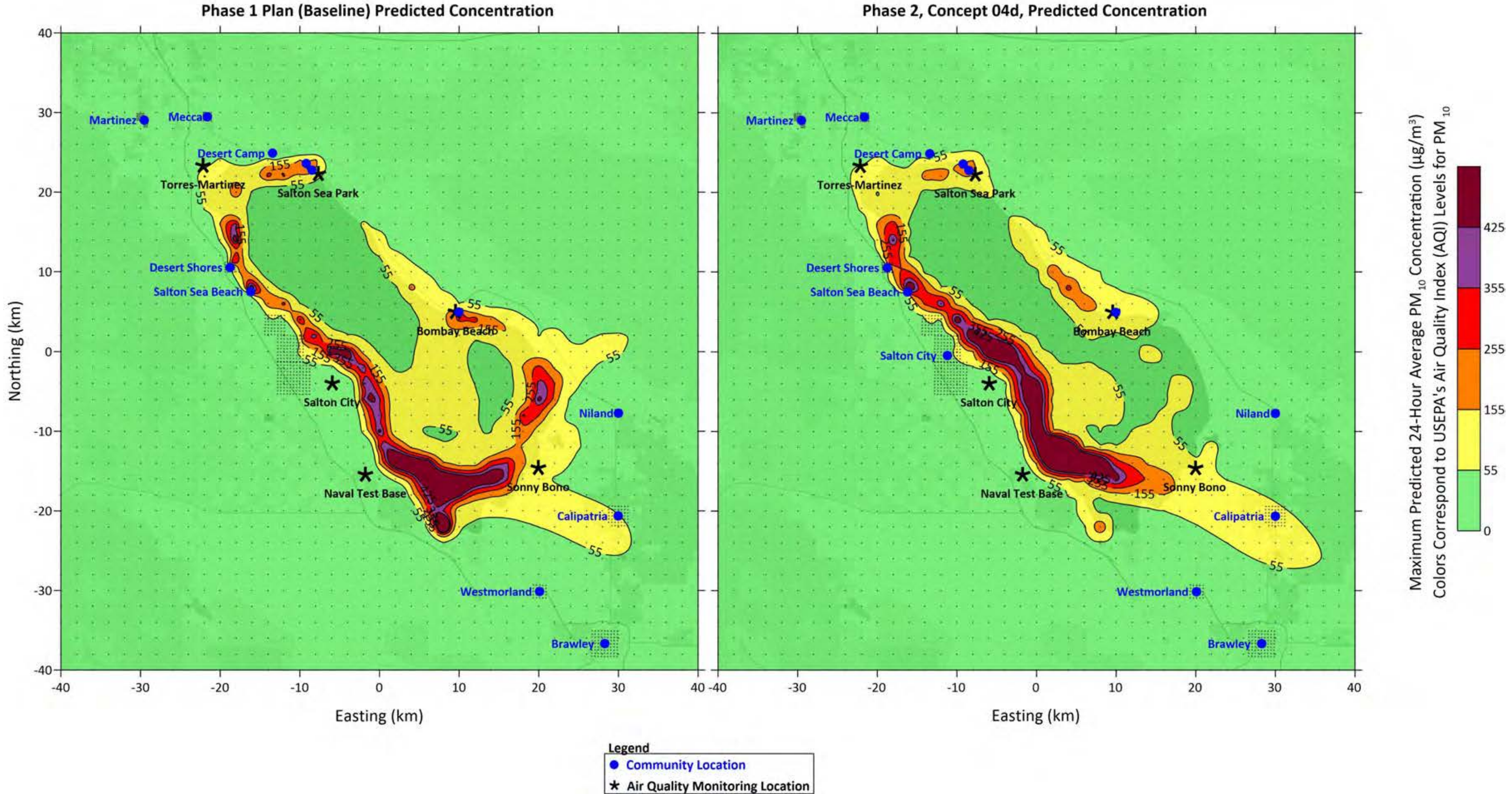
Salton Sea Long Range Plan
CALPUFF Results
Maximum Predicted 24-Hour Average PM_{10} Concentration

Emissions from Exposed Lakebed Only
Restoration Concept Evaluated: Phase 2, Concept 04d
Meteorological Event: June 30, 2020



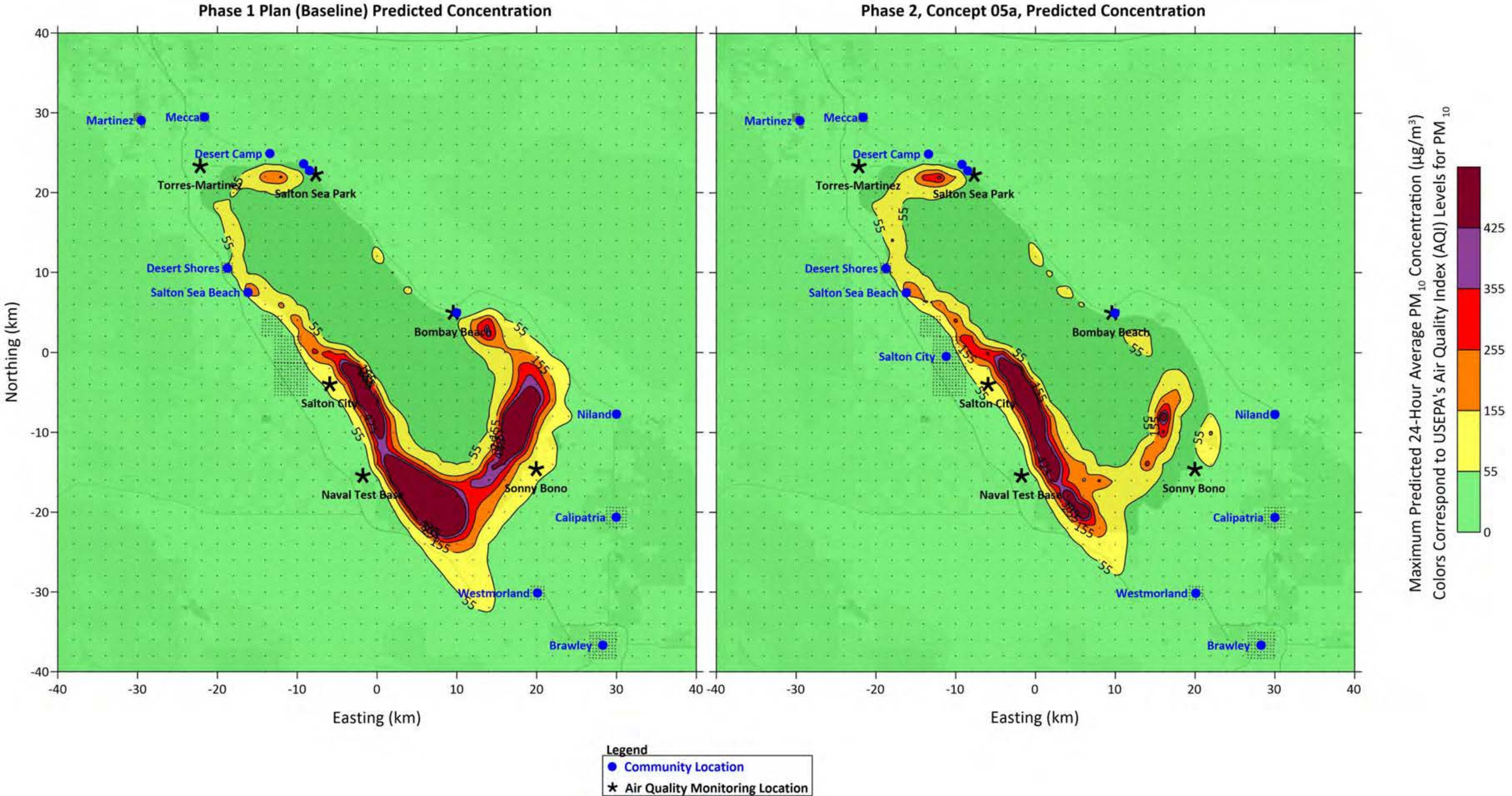
Salton Sea Long Range Plan
CALPUFF Results
Maximum Predicted 24-Hour Average PM_{10} Concentration

Emissions from Exposed Lakebed Only
Restoration Concept Evaluated: Phase 2, Concept 04d
Meteorological Event: November 7, 2020



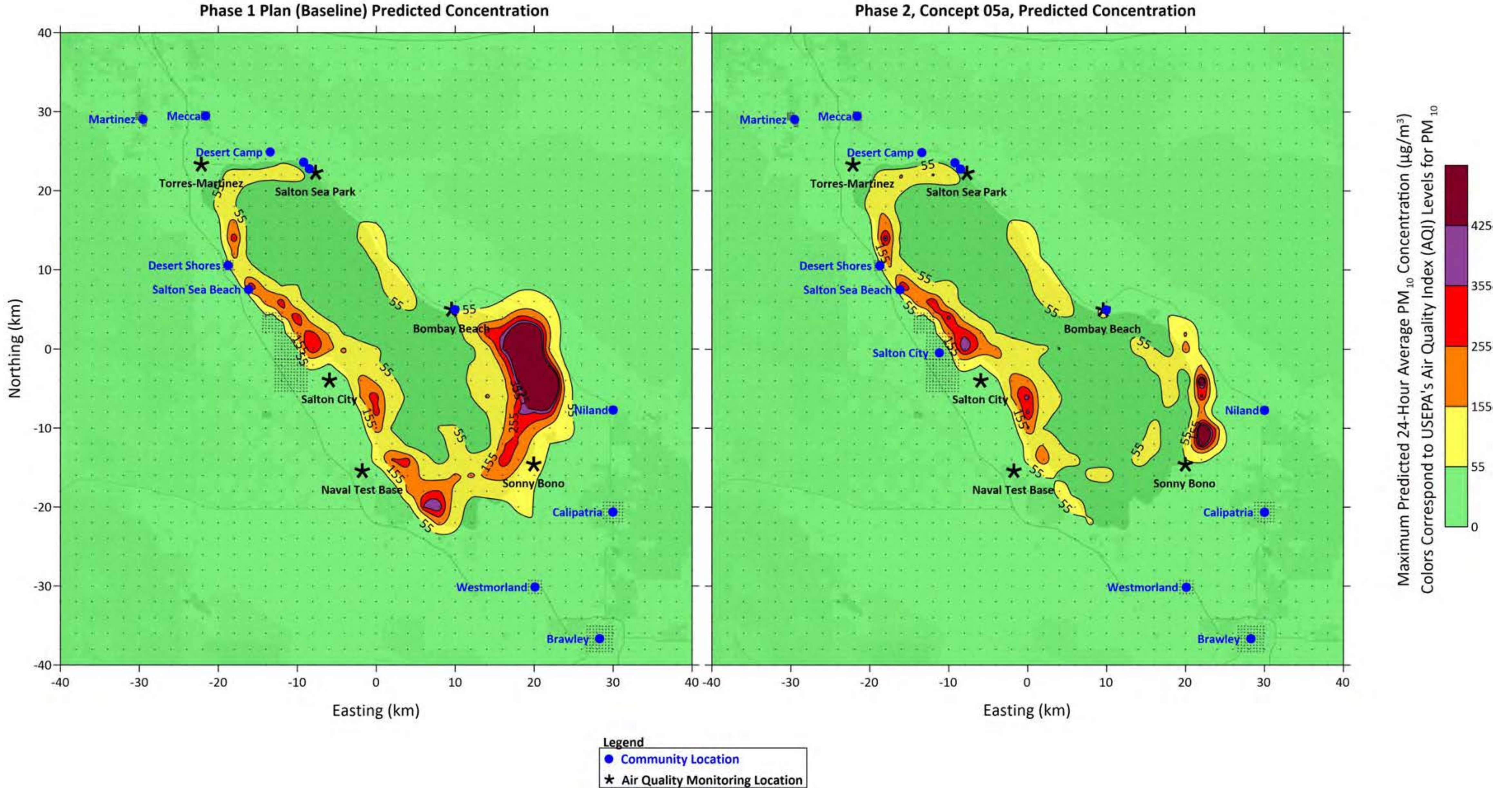
Salton Sea Long Range Plan
CALPUFF Results
Maximum Predicted 24-Hour Average PM_{10} Concentration

Emissions from Exposed Lakebed Only
Restoration Concept Evaluated: Phase 2, Concept 05a
Meteorological Event: January 29, 2020



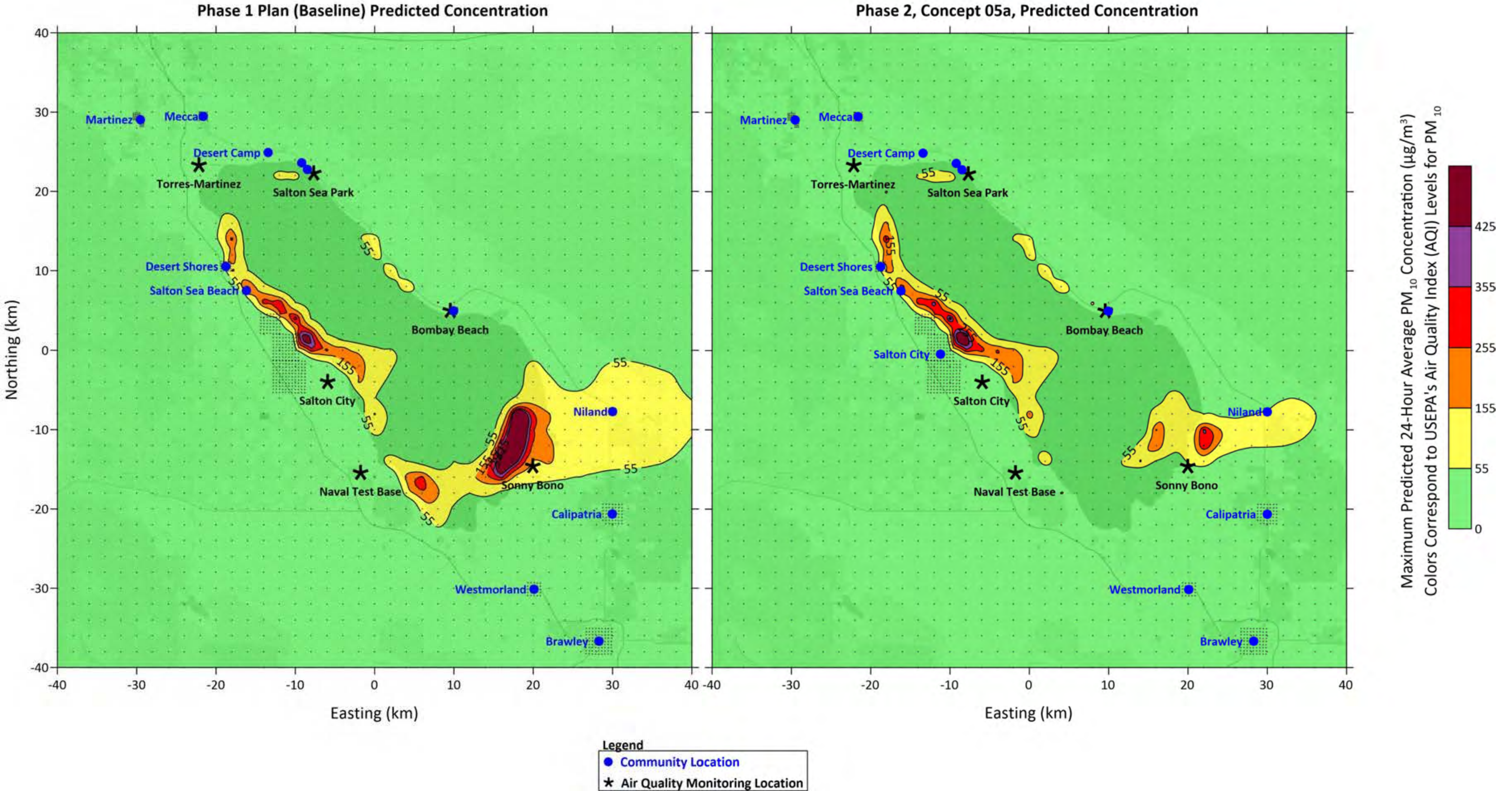
Salton Sea Long Range Plan
CALPUFF Results
Maximum Predicted 24-Hour Average PM_{10} Concentration

Emissions from Exposed Lakebed Only
Restoration Concept Evaluated: Phase 2, Concept 05a
Meteorological Event: March 1, 2020



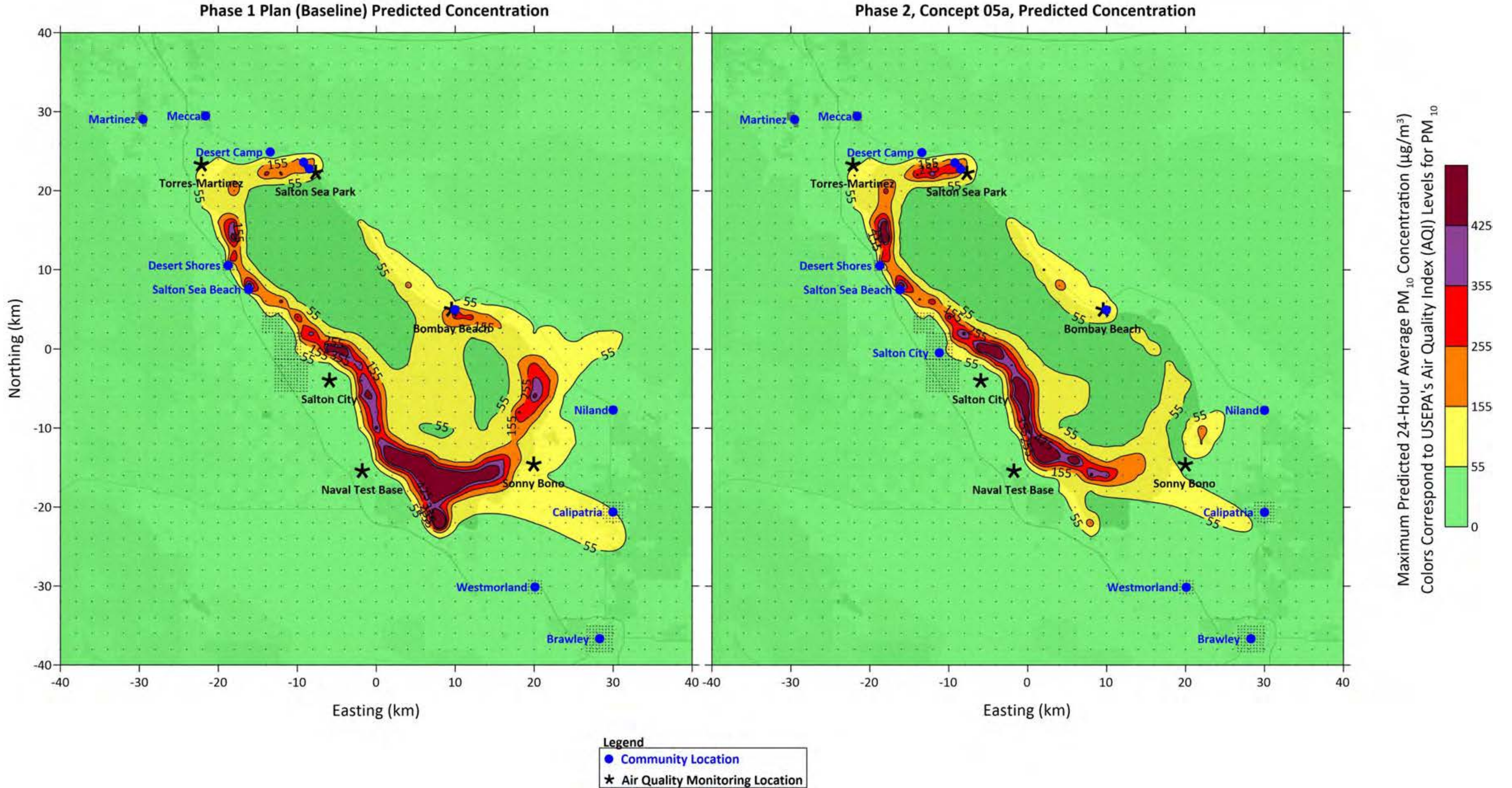
Salton Sea Long Range Plan
CALPUFF Results
Maximum Predicted 24-Hour Average PM_{10} Concentration

Emissions from Exposed Lakebed Only
Restoration Concept Evaluated: Phase 2, Concept 05a
Meteorological Event: June 30, 2020



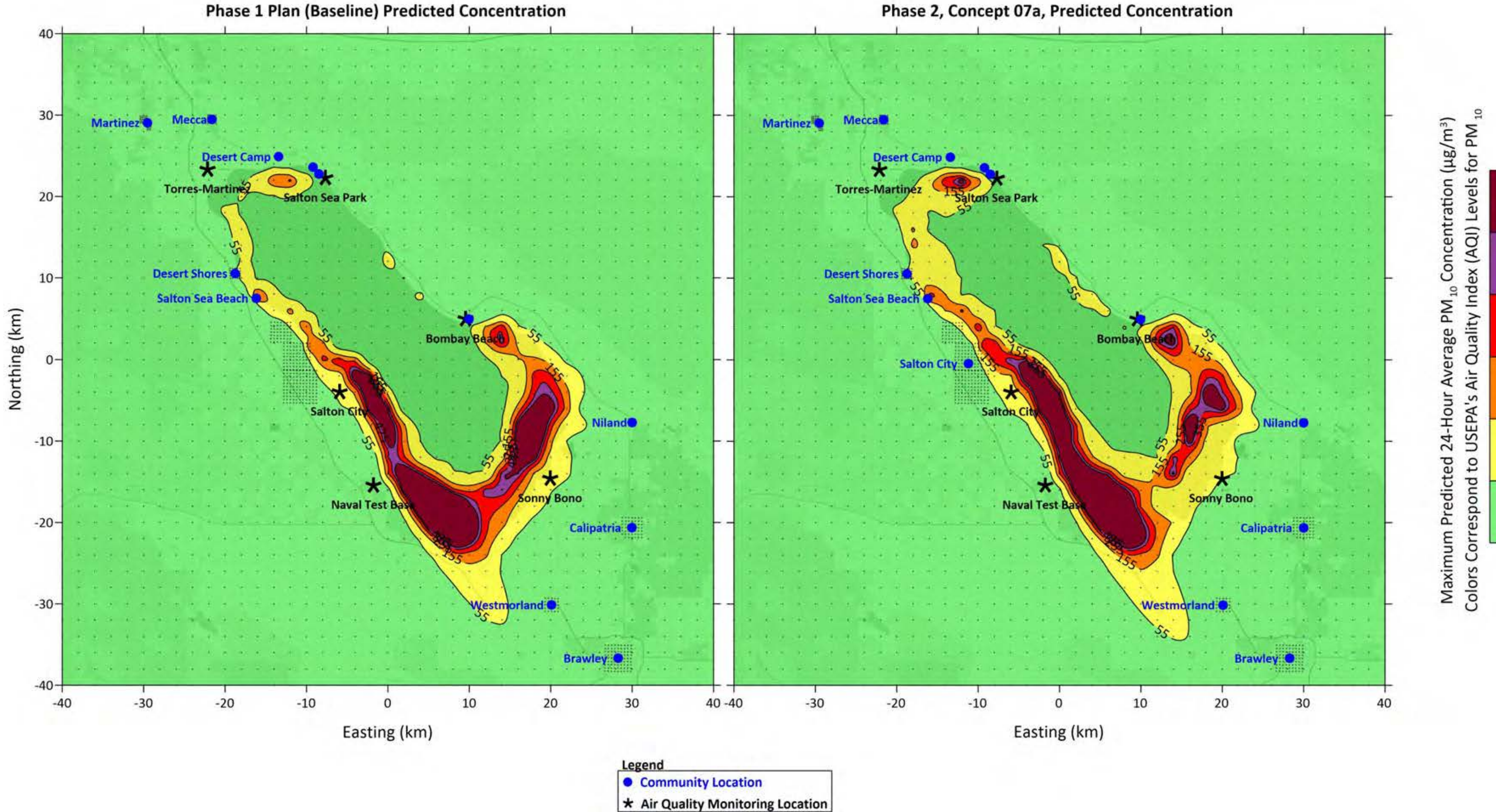
Salton Sea Long Range Plan
CALPUFF Results
Maximum Predicted 24-Hour Average PM_{10} Concentration

Emissions from Exposed Lakebed Only
Restoration Concept Evaluated: Phase 2, Concept 05a
Meteorological Event: November 7, 2020



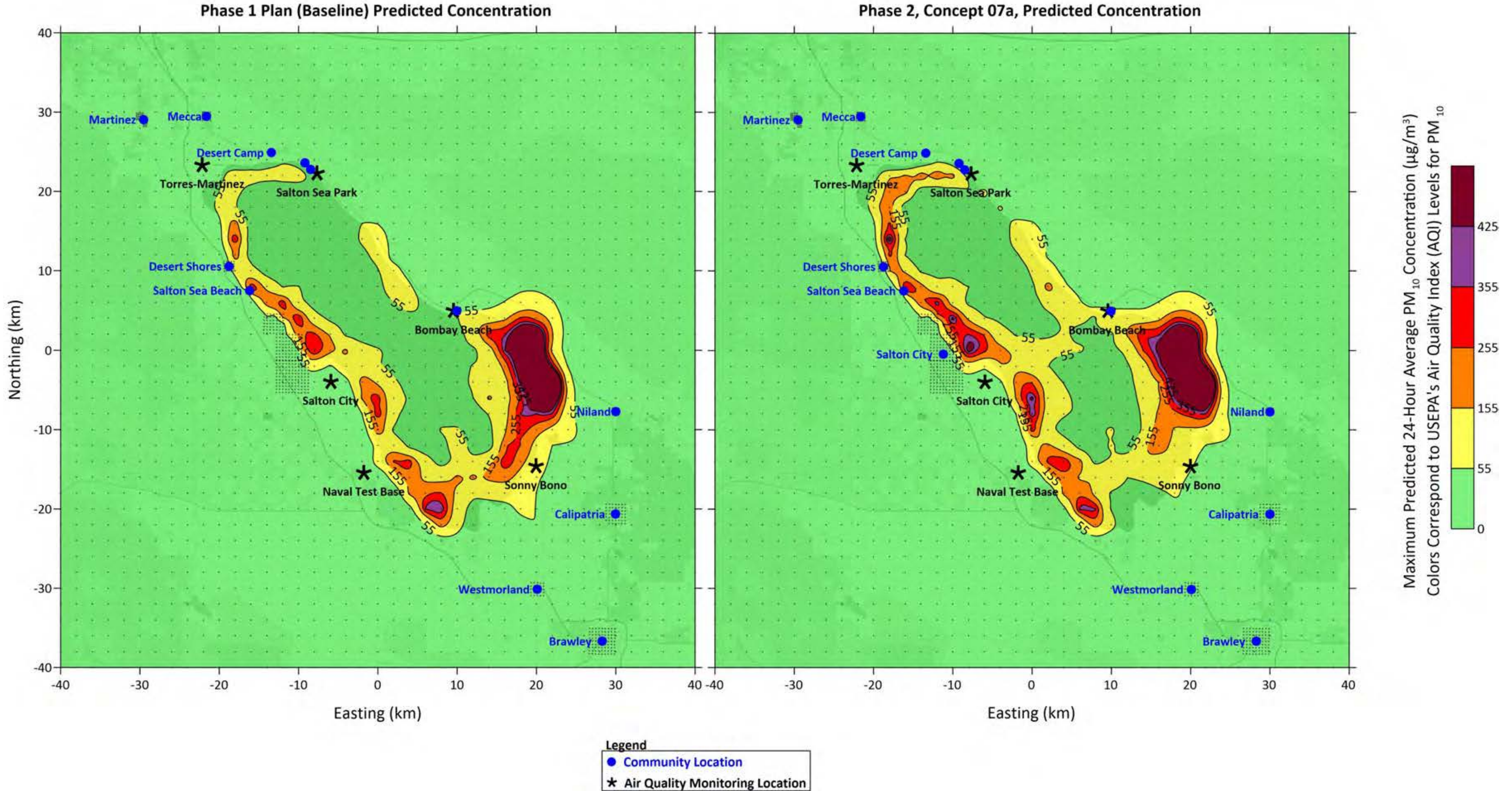
Salton Sea Long Range Plan
CALPUFF Results
Maximum Predicted 24-Hour Average PM_{10} Concentration

Emissions from Exposed Lakebed Only
Restoration Concept Evaluated: Phase 2, Concept 07a
Meteorological Event: January 29, 2020



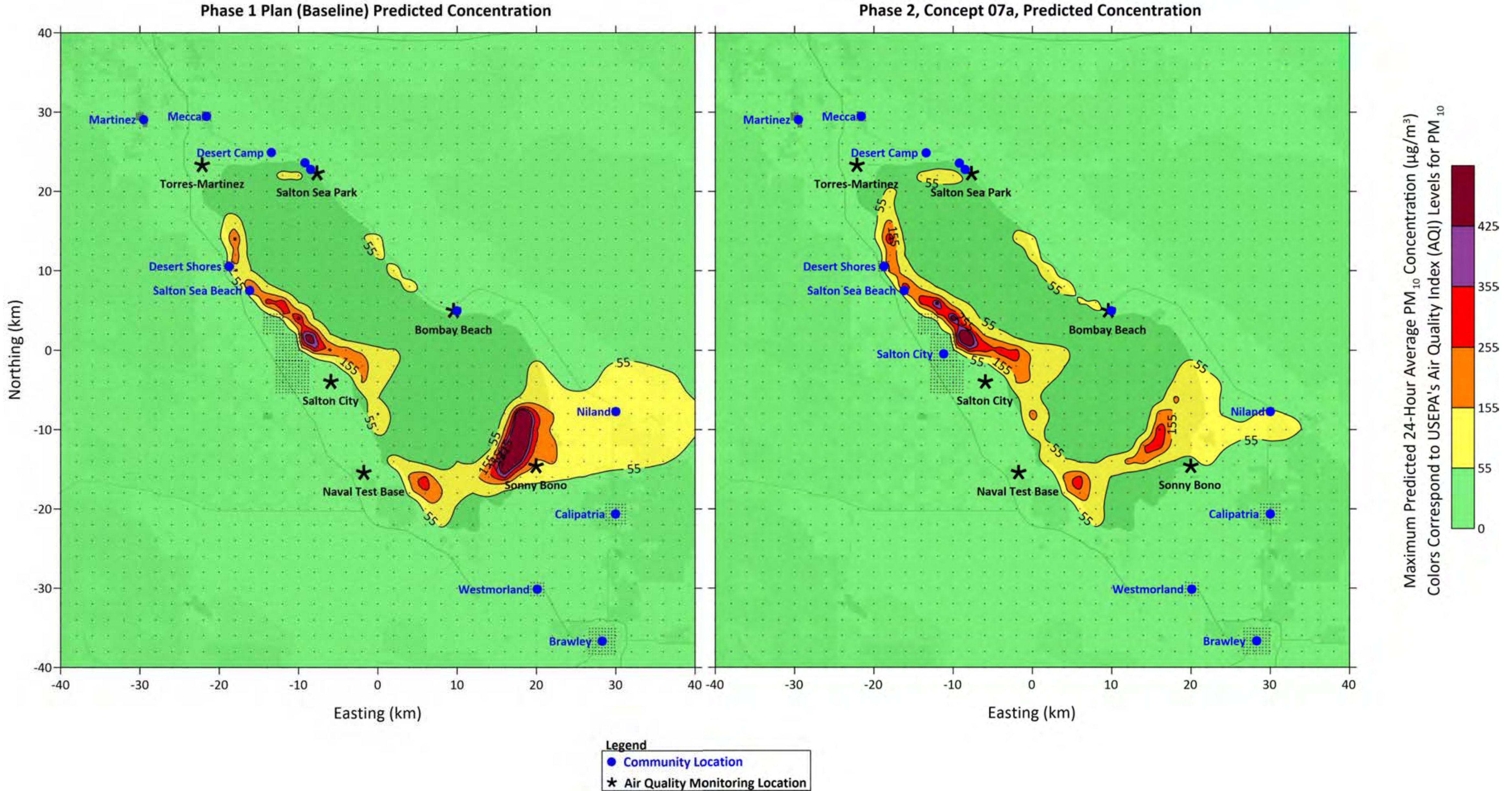
Salton Sea Long Range Plan
CALPUFF Results
Maximum Predicted 24-Hour Average PM_{10} Concentration

Emissions from Exposed Lakebed Only
Restoration Concept Evaluated: Phase 2, Concept 07a
Meteorological Event: March 1, 2020



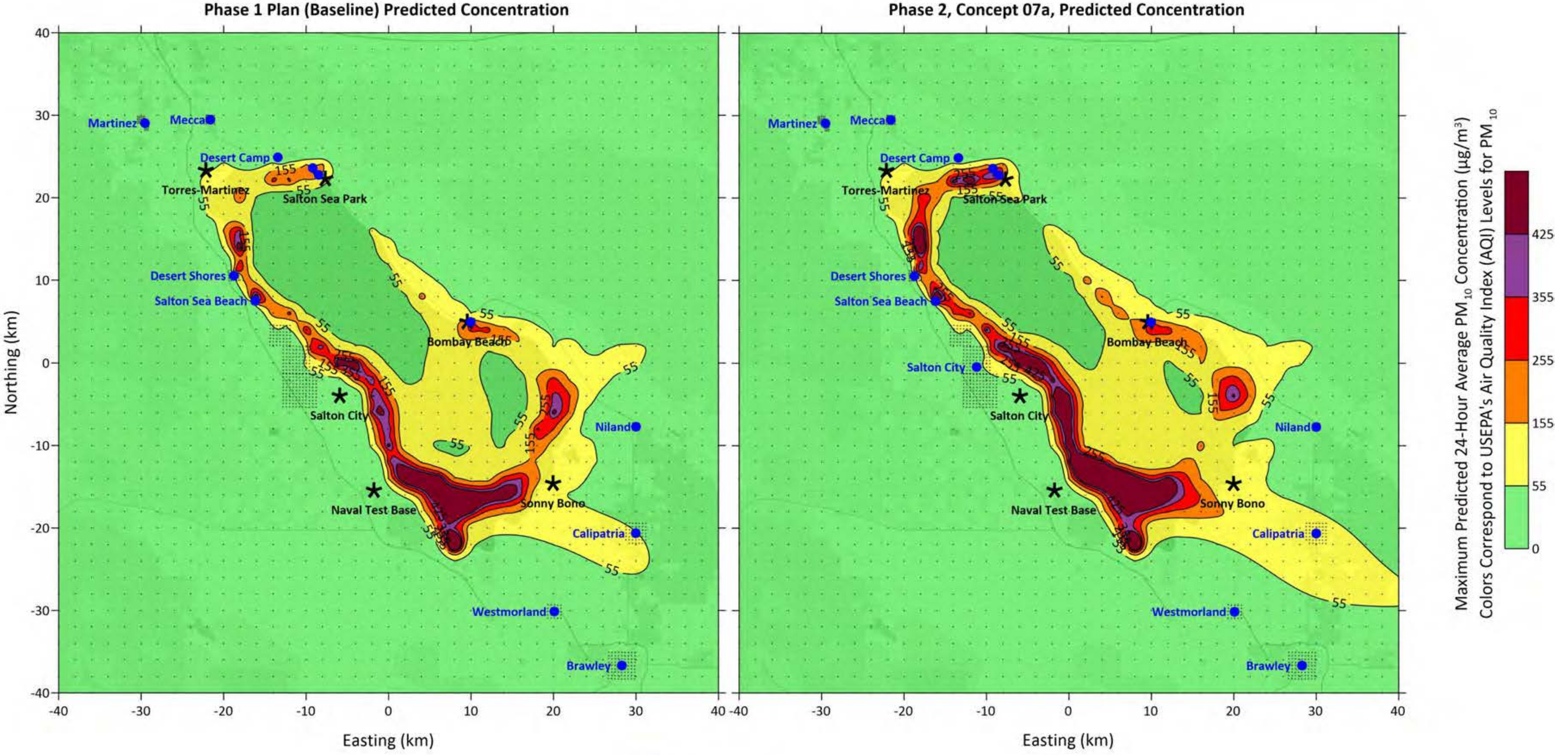
Salton Sea Long Range Plan
CALPUFF Results
Maximum Predicted 24-Hour Average PM_{10} Concentration

Emissions from Exposed Lakebed Only
Restoration Concept Evaluated: Phase 2, Concept 07a
Meteorological Event: June 30, 2020



Salton Sea Long Range Plan
CALPUFF Results
Maximum Predicted 24-Hour Average PM_{10} Concentration

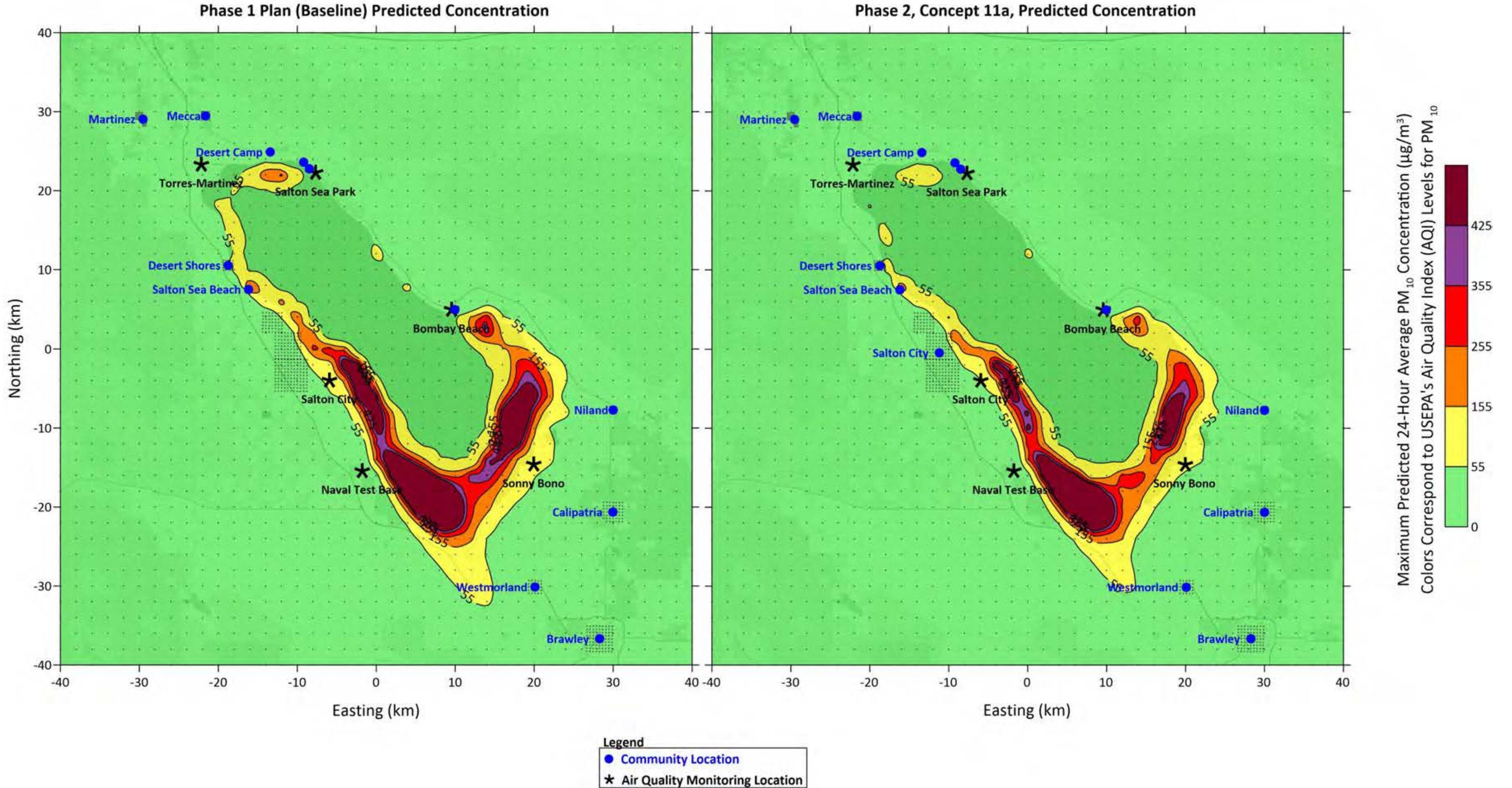
Emissions from Exposed Lakebed Only
Restoration Concept Evaluated: Phase 2, Concept 07a
Meteorological Event: November 7, 2020



Legend
● Community Location
★ Air Quality Monitoring Location

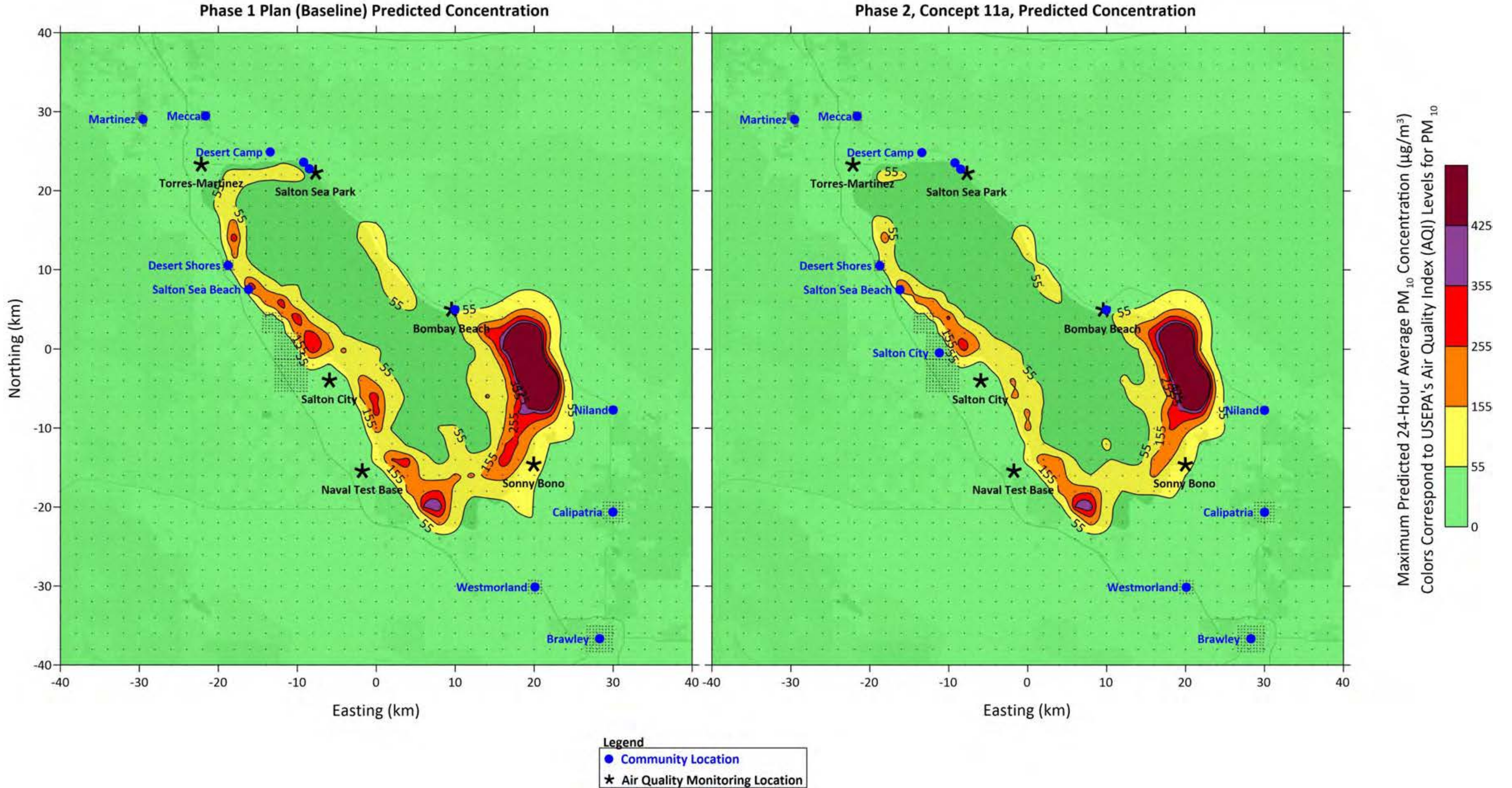
Salton Sea Long Range Plan
CALPUFF Results
Maximum Predicted 24-Hour Average PM_{10} Concentration

Emissions from Exposed Lakebed Only
Restoration Concept Evaluated: Phase 2, Concept 11a
Meteorological Event: January 29, 2020



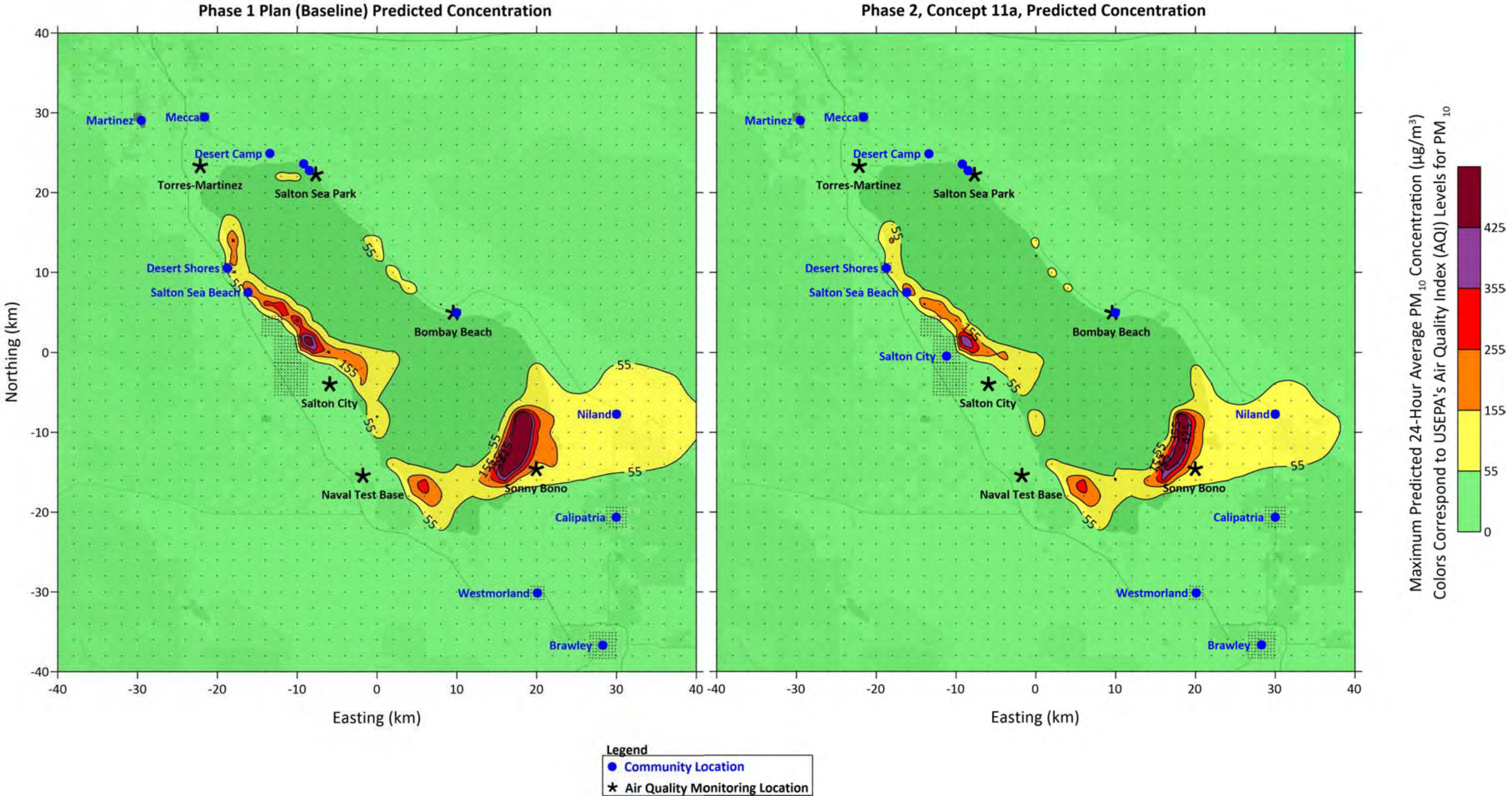
Salton Sea Long Range Plan
CALPUFF Results
Maximum Predicted 24-Hour Average PM_{10} Concentration

Emissions from Exposed Lakebed Only
Restoration Concept Evaluated: Phase 2, Concept 11a
Meteorological Event: March 1, 2020



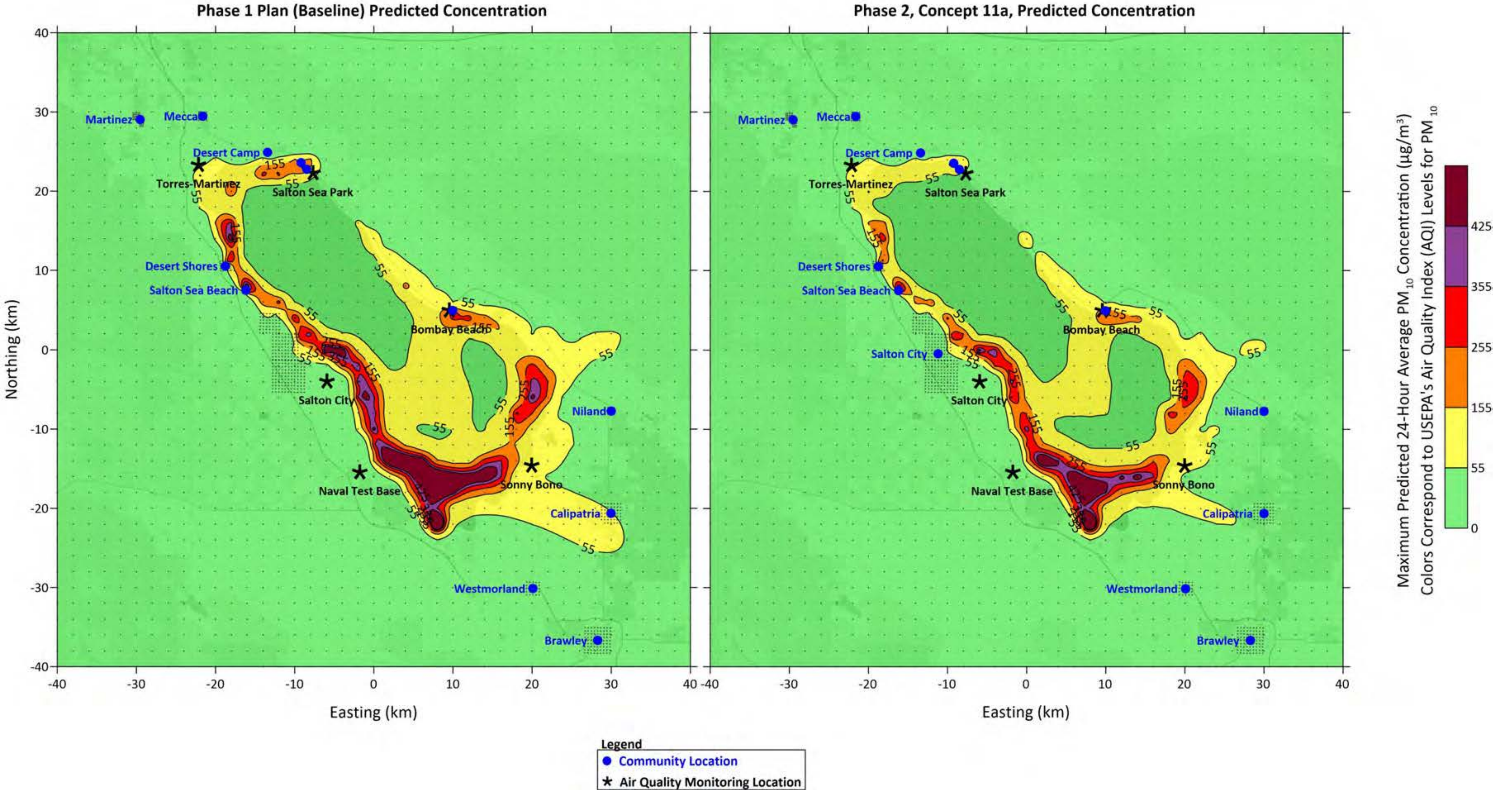
Salton Sea Long Range Plan
CALPUFF Results
Maximum Predicted 24-Hour Average PM_{10} Concentration

Emissions from Exposed Lakebed Only
Restoration Concept Evaluated: Phase 2, Concept 11a
Meteorological Event: June 30, 2020



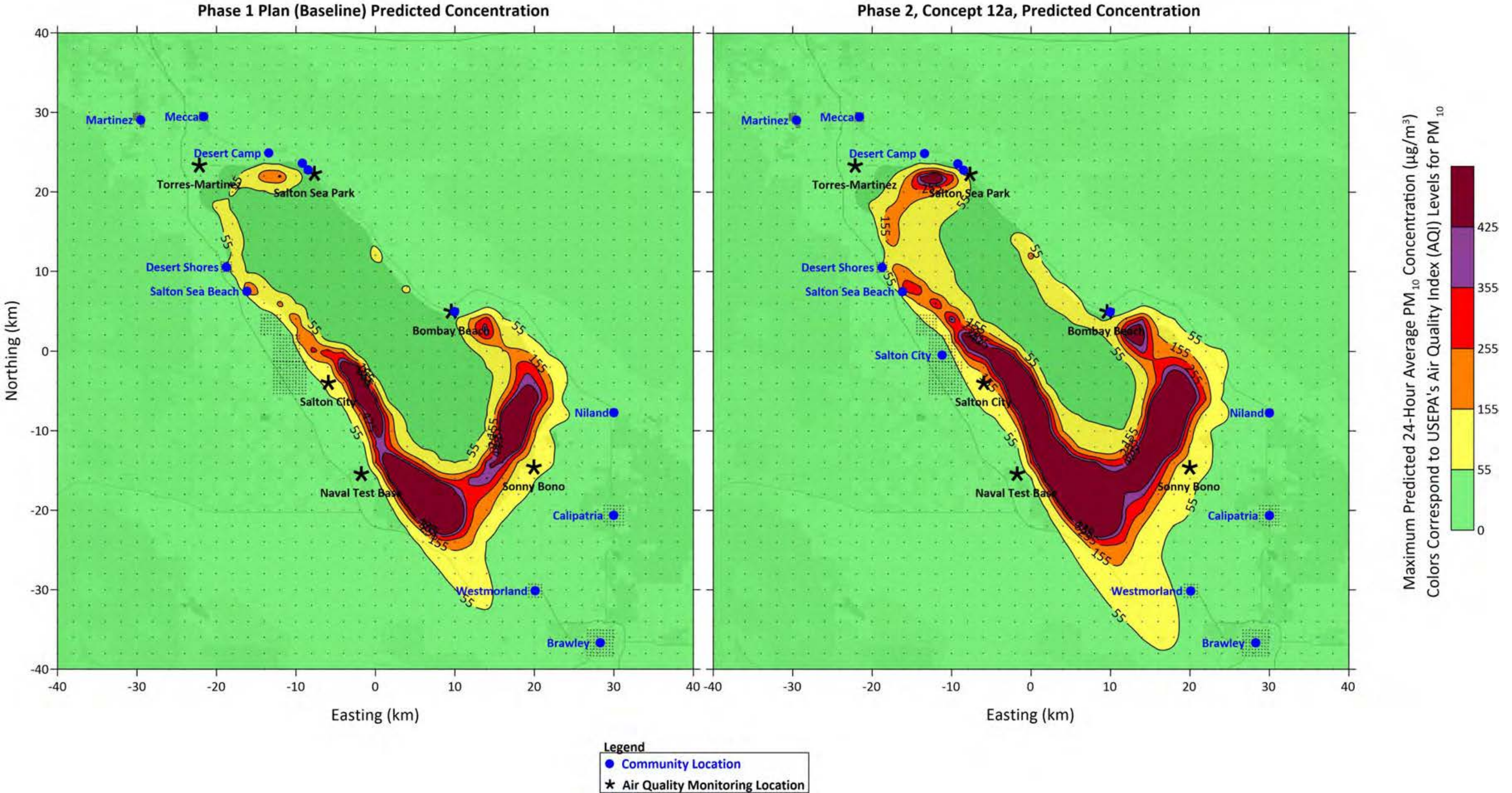
Salton Sea Long Range Plan
CALPUFF Results
Maximum Predicted 24-Hour Average PM_{10} Concentration

Emissions from Exposed Lakebed Only
Restoration Concept Evaluated: Phase 2, Concept 11a
Meteorological Event: November 7, 2020



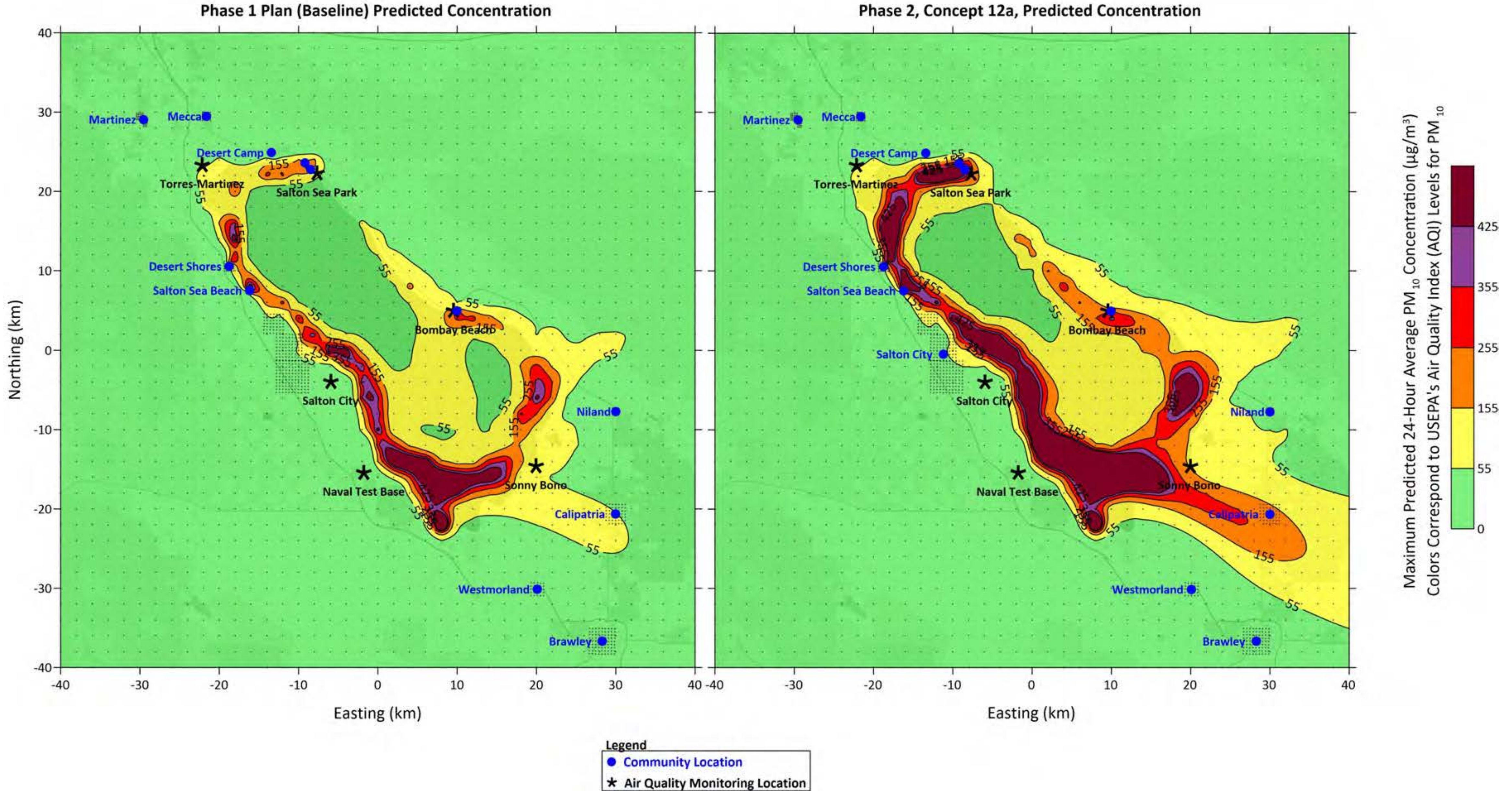
Salton Sea Long Range Plan
CALPUFF Results
Maximum Predicted 24-Hour Average PM_{10} Concentration

Emissions from Exposed Lakebed Only
Restoration Concept Evaluated: Phase 2, Concept 12a
Meteorological Event: January 29, 2020



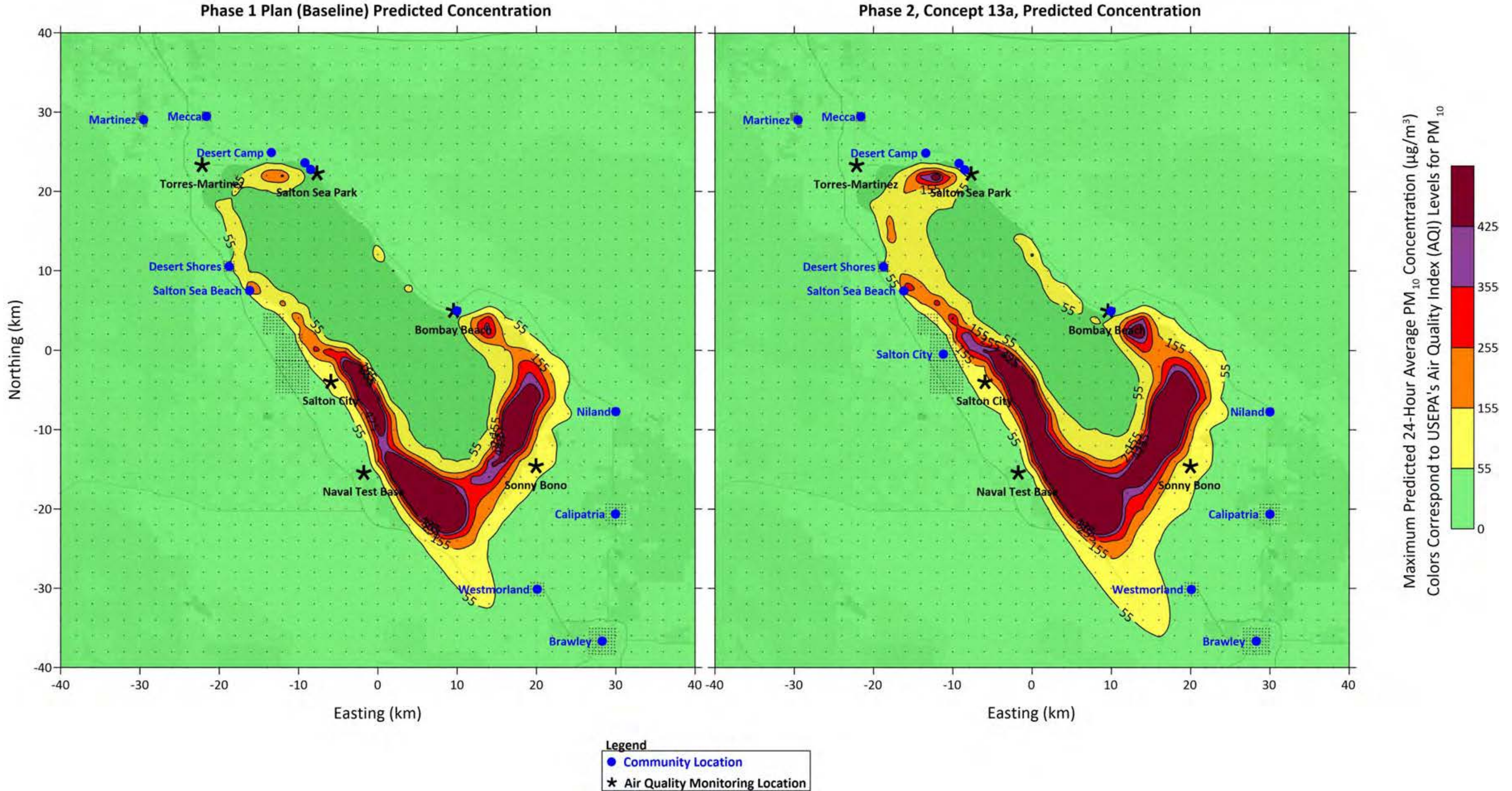
Salton Sea Long Range Plan
CALPUFF Results
Maximum Predicted 24-Hour Average PM_{10} Concentration

Emissions from Exposed Lakebed Only
Restoration Concept Evaluated: Phase 2, Concept 12a
Meteorological Event: November 7, 2020



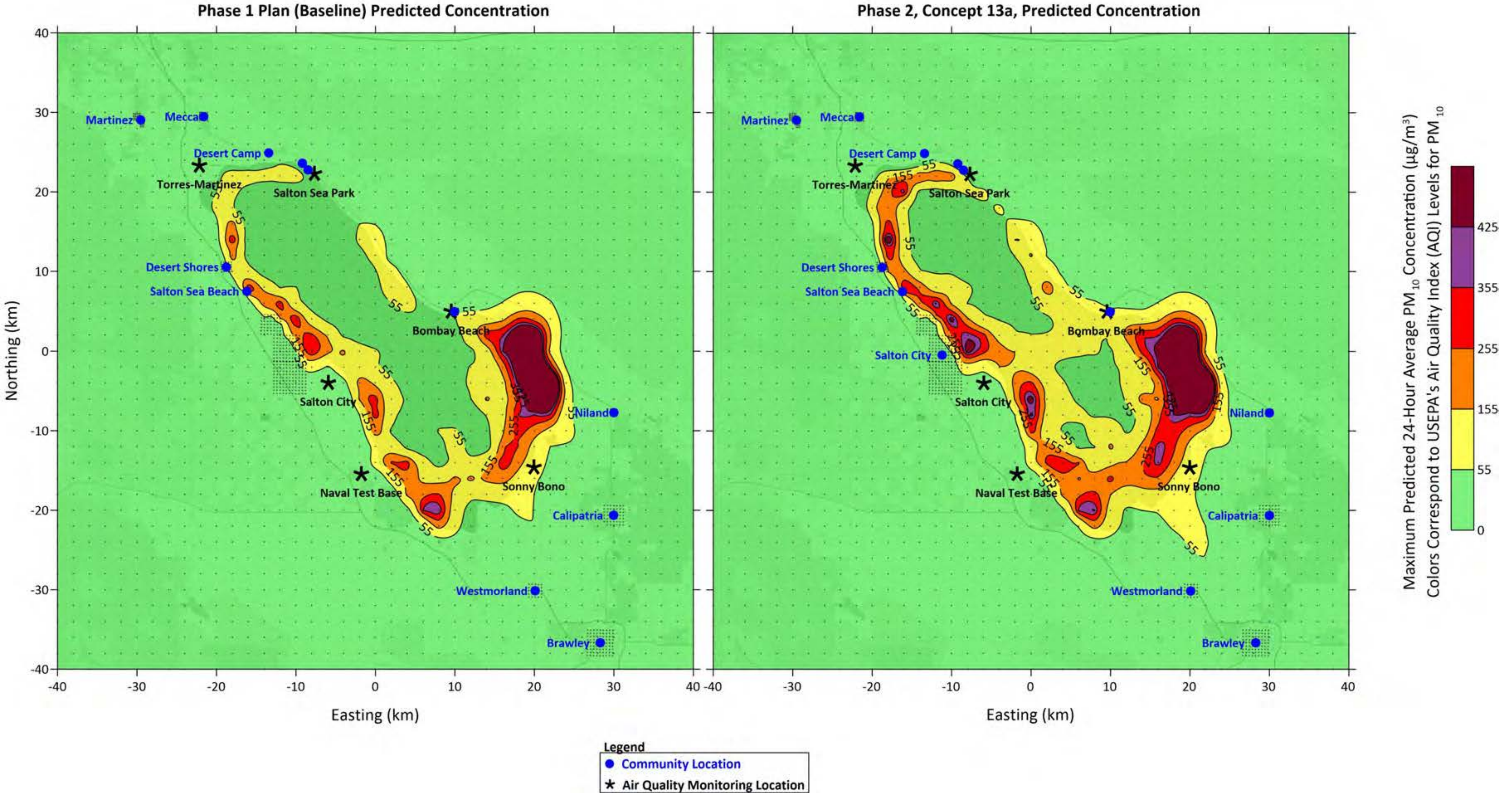
Salton Sea Long Range Plan
CALPUFF Results
Maximum Predicted 24-Hour Average PM_{10} Concentration

Emissions from Exposed Lakebed Only
Restoration Concept Evaluated: Phase 2, Concept 13a
Meteorological Event: January 29, 2020



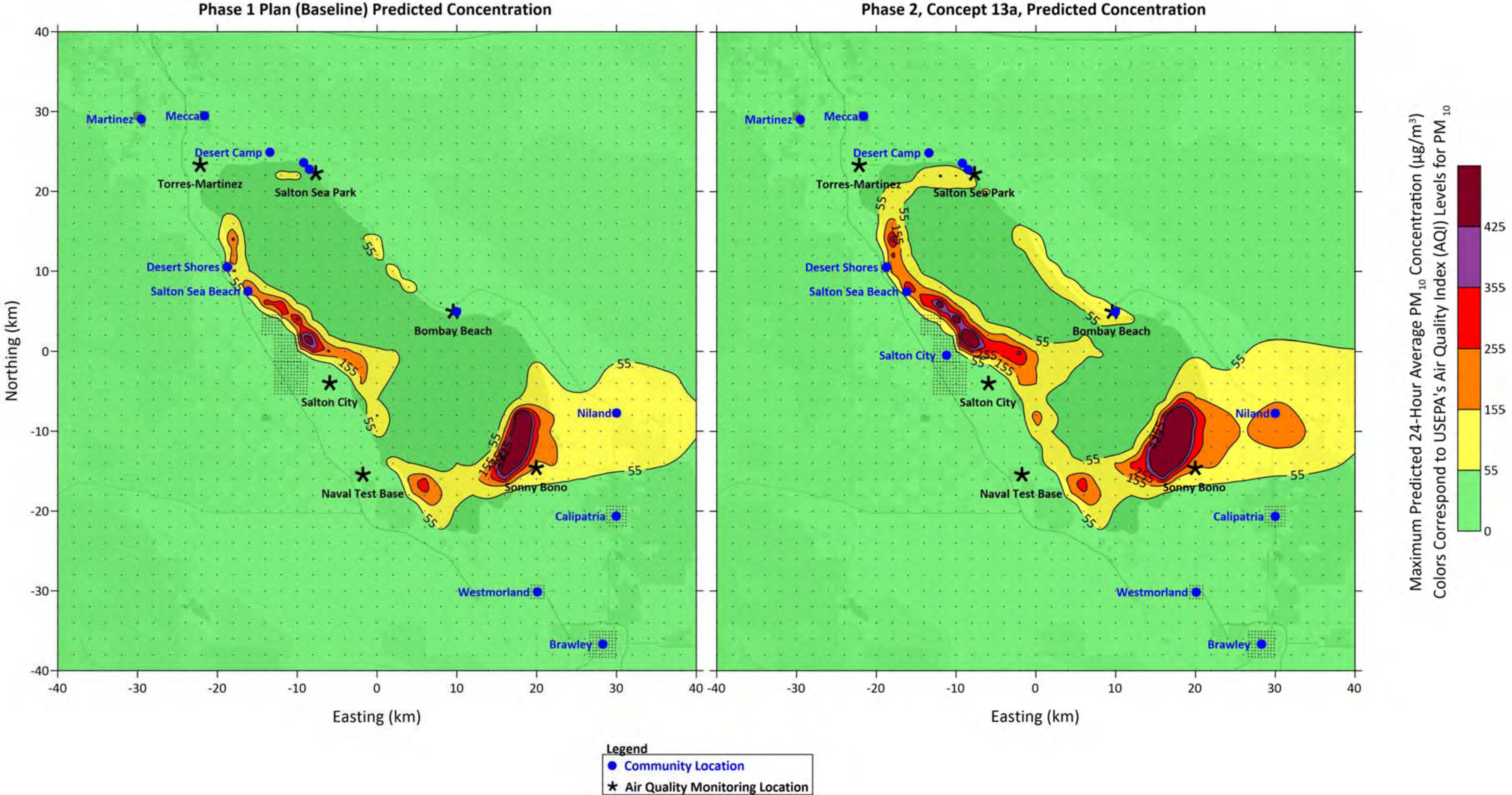
Salton Sea Long Range Plan
CALPUFF Results
Maximum Predicted 24-Hour Average PM_{10} Concentration

Emissions from Exposed Lakebed Only
Restoration Concept Evaluated: Phase 2, Concept 13a
Meteorological Event: March 1, 2020



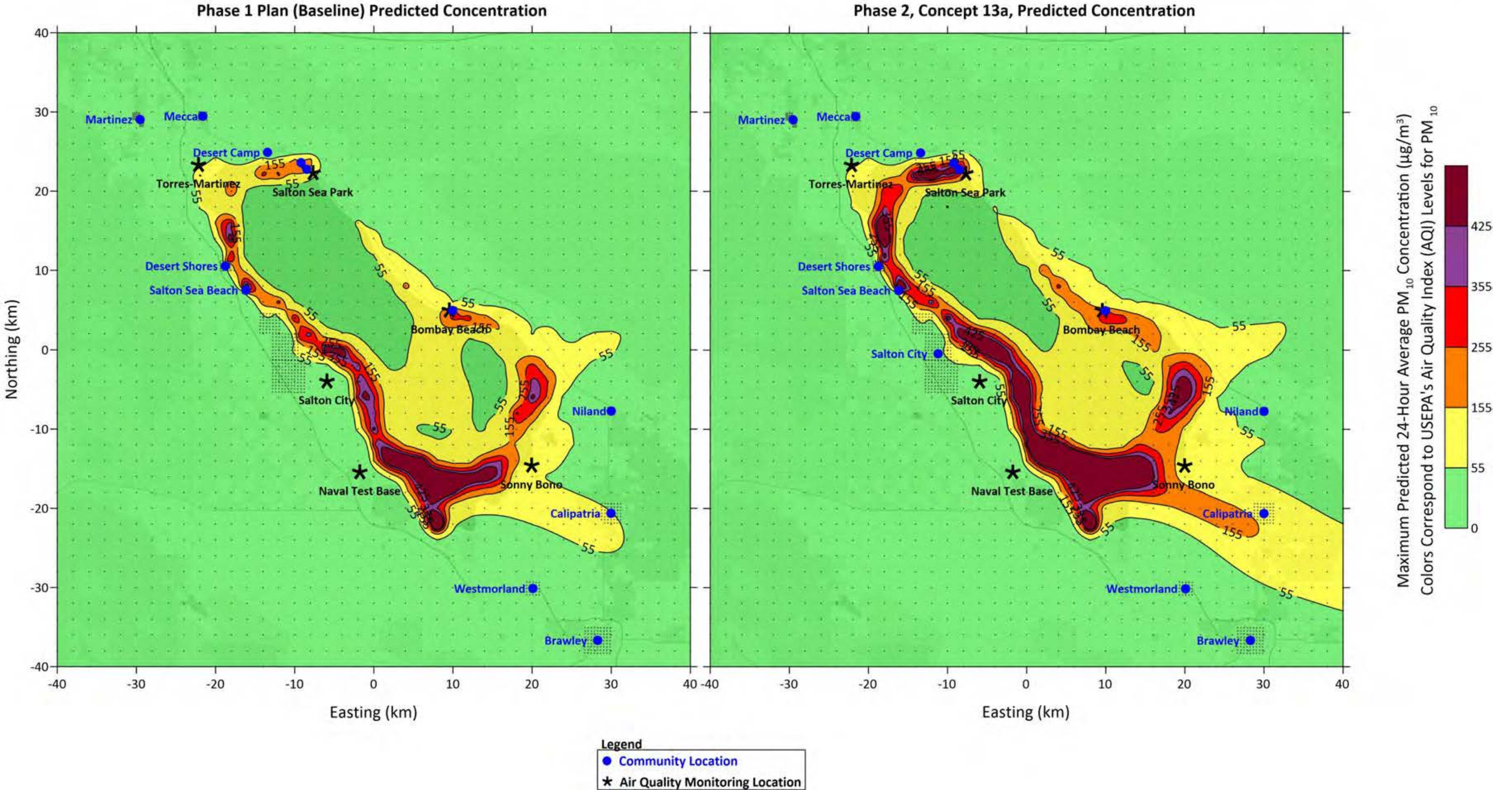
Salton Sea Long Range Plan
CALPUFF Results
Maximum Predicted 24-Hour Average PM_{10} Concentration

Emissions from Exposed Lakebed Only
Restoration Concept Evaluated: Phase 2, Concept 13a
Meteorological Event: June 30, 2020



Salton Sea Long Range Plan
CALPUFF Results
Maximum Predicted 24-Hour Average PM_{10} Concentration

Emissions from Exposed Lakebed Only
Restoration Concept Evaluated: Phase 2, Concept 13a
Meteorological Event: November 7, 2020



SALTON SEA MANAGEMENT PROGRAM

CALIFORNIA NATURAL RESOURCES AGENCY

DEPARTMENT OF WATER RESOURCES STATE OF CALIFORNIA

CALIFORNIA DEPARTMENT OF FISH & WILDLIFE