Part II

Windsurfing Importance, Impact, and Preservation


ADSurfPhoto


ADSurfPhoto


Candlestick Windsurfing

1 Introduction

Shifting now to the primary focus of these Comments, this part will examine the potential impacts of the proposed Project on the recreational windsurfing Resource at CPSRA.

The Waterfront Preservation District development pattern would strongly encourage and cultivate a truly remarkable and unique activity that currently coexists with the Baylands. Presently no consideration whatsoever is included for preserving the windsurfing Resource at CPSRA that has existed for 30 years.

The current DEIR claims "no significant impact" would take place on the Resource despite a wall of buildings some 200' above sea level possibly being constructed just 500' immediately upwind along the extent of the shore where windsurfing takes place.

1.1 Embrace Natural Resources

At the very outset and without first discussing technical errors and omissions in the Analysis, we believe the Project should strive to go above and beyond the very minimum of what is required by law in terms of natural resource preservation. The Project should embrace the adjacent recreational activities including the windsurfing Resource.

This Project is not located hundreds of miles inland amidst a sprawling uniform desert landscape. The Baylands is an incredible dynamic and sensitive area full of natural transition at the intersection of mountain, ocean, valley, and bay. It is a rare location with valuable recreational opportunities that exist no where else.

Presently, no consideration and mitigation whatsoever is included for windsurfing. The Project should go out of its way to avoid unforeseen or underestimated impacts to this and other resources and activities. It should voluntarily adopt a margin-of-error to avoid underestimating the risks to present natural and recreational resources. There is no reason why development cannot coexist with these activities and why both users of the natural resources and private project sponsors cannot benefit and prosper together.

The City of Brisbane should not accept highly questionable justification for "no significant impact" while completely ignoring the potential errors or understatements in the Analysis that may very well render the windsurfing Resource at CPSRA unusable or usable merely at a substantially reduced fraction of the present condition.

Once development is in place, whatever damage may occur to natural resources either through known or unforeseen consequences will be practically irreversible.

1.2 Unique, Valuable, and Scarce Resource

These Comments were prepared by many for whom a very important part of their most passionate lifelong interest is in danger. Over 30 years of continual use and history at CPSRA has marked it as one of the premier windsurfing resources in the San Francisco Bay, if not the entire continental United States.

It is one of only three suitable windsurfing locations in San Francisco County, one of four locations regularly used on the Western side of the Bay north of CA-92, and one of the only locations in the entire Bay Area that is not subject to tidal restrictions, boat traffic hazard, or danger of stranding.

It is ideally suited to all skill levels and is routinely used by beginners as well as top-ranked world competitors. The unique topography and siting creates wind flow that is much more regular than anywhere else in the Bay Area. Finally, it is one of the only off-shore wind locations in the Bay making the water condition substantially devoid of wind swell even during periods of high wind.

An Internet forum at iWindsurf.com provides a community where people may post about windsurfing experiences. From 5/22/2008 to 6/19/2013, 4,372 such posts were recorded and analyzed for these Comments. Based on a keyword search over all of the Bay Area windsurfing sites, Candlestick was the second most frequently discussed site, trailing only Berkeley.

1.3 Unrealistic and Incomplete Thresholds, Assumptions, and Methods

Given their dedication to this unique and valuable Resource, the frustration and disappointment among those of the interested public who reviewed the proposed Project and Analysis was staggering. It is unfathomable to imagine that a possible virtual wall of 4,200' of construction up to 200' above sea-level in some areas along the Western edge of the Practical Sailing Area would have "no significant impact" on wind-flow on a site that begins just 500' downwind.

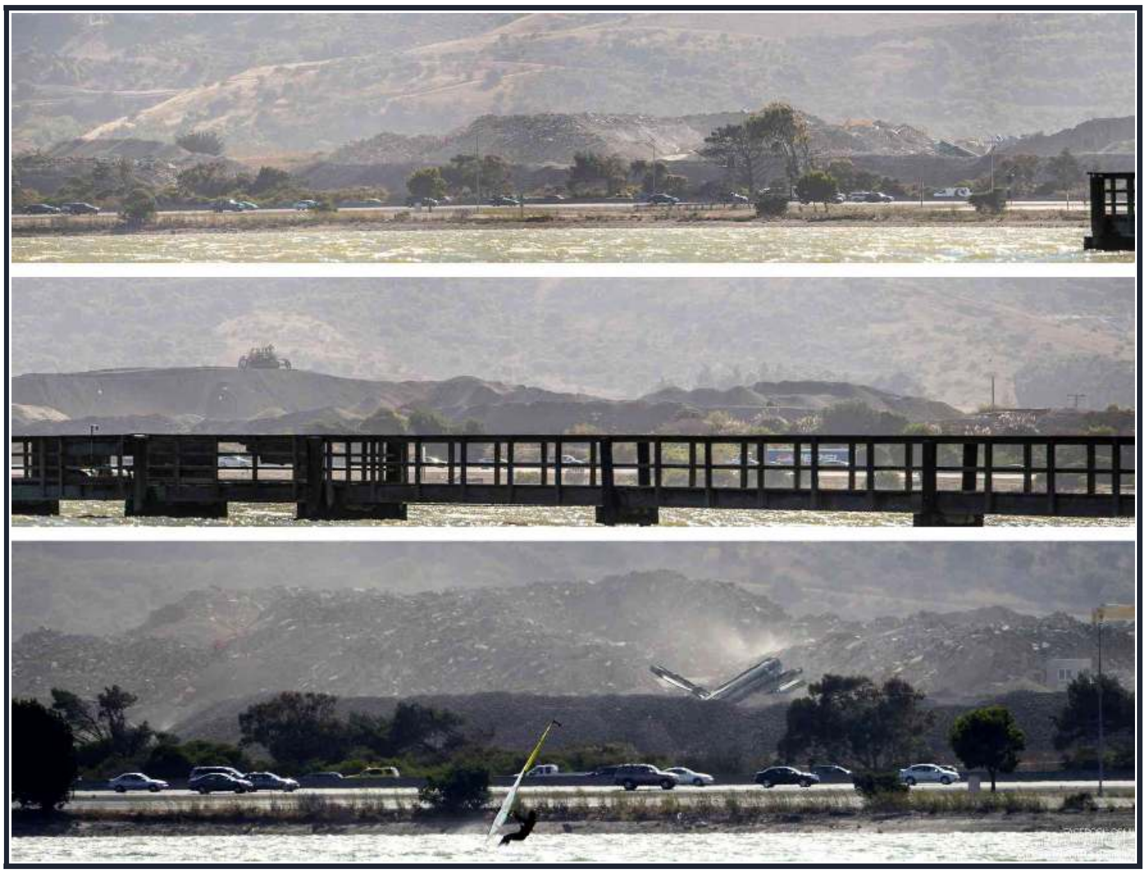

Figure 4: Existing Dirt Walls from Soil Processing on Baylands

Dirt mounds that rise some 50' to 70' above surrounding grades already border portions of the Western area of CPSRA [11]. The proposed Project could expand intense development North and South for a total length of perhaps 4,200' and increase the effective height of obstructions along this Western shore up to 200' above sea level in some portions. This figure is provided for scaling reference.

Only a handful of newly measured impact points specifically tied to the Project were even made in the Practical Sailing Area in the Analysis. The Practical Sailing Area is a fraction of the overall CPSRA, the area most critical and regularly used, and the area closest to the Project and most susceptible to impact.

No measurement points were made in this Practical Sailing Area closer than at least 1,500' from the Project itself. Nonetheless, 58% of the sparse few newly measured Analysis points in this area were projected to be at levels that would contribute to a substantial loss of availability of the Resource as shown herein (greater than a 5% mean wind speed reduction). Furthermore, the unexamined portion of the Practical Sailing Area would be even more impacted as it is closer to the Project and its wind impacts.

The Analysis itself begins with the statement: "there appear to be no specific criteria for minimum wind speeds to support 'good' sailing." With this caveat as a basis, how can the public have any confidence that this is a faithful examination of the potential impacts? If such a statement were true, then how would windsurfers decide where and when to go windsurfing? Do they simply flip a coin? What about professional forecasters? Does the same logic hold true for all sailing vessels? What about for any other weather or natural resource-dependent activity?

Not only is such a statement misleading, it effectively relieves the analyst from justifying the significance threshold used in calculating impacts. In fact, no justification is given in the Analysis for why the selected threshold used is appropriate for this location and how it translates to an actual change in availability of the Resource based on current established conditions for use of the Resource.

With no understanding of what constitutes specific criteria to support "good" sailing tied specifically to this site and its existing conditions and no justification for why the significance threshold is appropriate or meaningful for this location, one should reasonably question how the conclusions of the Analysis could be anything other than arbitrary.

In preparing the Analysis, it seems as though much work went into applying methods used in other projects having a fraction of the scale and much more detail than this Project. The Project and its surrounds encompasses thousands of acres and none of the building footprints, heights, orientations, finished elevations, site plan details, landscaping specifications, or other information is firmly known at this time.

Though the Analysis attempts to model a "worst case" impact scenario, it never explains the methods or justifications for why its chosen assumptions and shortcuts truly fit such an objective. Is it more conservative to model the whole project as a maximum height wall? What about the increased turbulence caused by surface roughness from gaps between buildings and varying building heights?

While work was going into building something that could be placed into a wind tunnel, no primary research was conducted to answer the basic question: "what constitutes minimum specific criteria for "good" sailing at Candlestick Park State Recreation Area?"

No surveys of users of the Resource were conducted, no exploration of existing data sources meaningful to users of the Resource, and no meaningful field tests were conducted or real-world observations made as far as we are aware. While field tests are not specifically required by CEQA, there is a requirement that the impact Analysis bear some realistic and demonstrable direct connection to the potential change in availability of the actual Resource concerned.

1.4 Goal of Comments

It is hard to read the Analysis and not objectively feel through the stark lack of detail and incompleteness as though it was but a token effort to "check the boxes" and placate the public interests with the minimum possible level of thoroughness. Much of the Analysis consists of cut-and-paste reductions of previous EIR even so far as to include substantial data from another EIR that did not even model the Project as far as we know.

We hope these Comments will assist the City of Brisbane and others in making sure that all practical diligence is pursued in evaluating the potential impacts of the Project in the focus of these Comments as with the other potential impacts examined elsewhere in the DEIR.

Though this Project is arguably one of the largest and most ambitious in Brisbane's recent history, we are confident that Brisbane has every desire and all capabilities to meet and exceed the highest standards of excellence for considering and protecting public natural resources.

These Comments start from where the Analysis leaves off. They highlight critical assumptions and potential effects on the Analysis. They attempt to establish a conservative, realistic, calibrated, and actionable criteria for "good" sailing at CPSRA. They examine the potential Project impact on the actual usability and availability of the Resource in concrete absolute terms that are meaningful to the lay public.

Based on this work, these Comments demonstrate that the potential impact due to this Project on the Resource is unsurprisingly quite significant.

2 Methodology and Assumption Deficiencies

The DEIR contains important problems or misunderstandings in analysis methods and assumptions.

2.1 Comparing the Project to 300 Airport Boulevard

The Analysis appears to closely follow the methods and significance thresholds from the recently approved 300 Airport Boulevard project in the City of Burlingame. At the outset, it is important to consider the differences between the Project and 300 Airport Boulevard despite the similar analysis methods and conclusions.

Project is Order of Magnitude Larger

Compared to 300 Airport Boulevard, the Project includes development over potentially 35-40 times more acreage, 10-14 times more buildable square feet, much higher maximum building heights and widths, a windsurfing impact area 4-8 times larger, and a building footprint that is not even known at this time. Unlike 300 Airport Boulevard, the Project is so large that it could not even be modeled in the wind tunnel as one complete piece.

To our knowledge, typical use of wind tunnel modeling for considering structure impacts on pedestrians or windsurfing activity has been limited to much smaller scale projects on the order of tens of acres or less for which specific building footprints and site plan details have been established.

300 Airport Boulevard and Executive Park are examples of such smaller scale projects. By comparison, this Project and its surrounds encompass thousands of acres with few final building and site plan details.

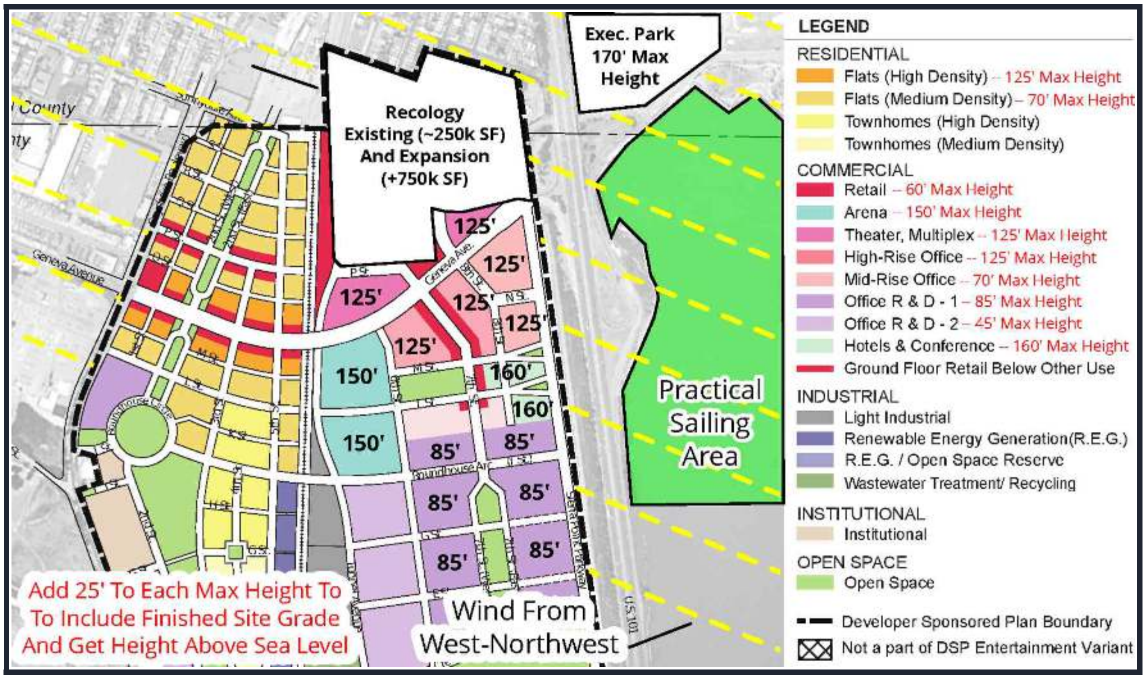

Figure 5: Possible Project Building Heights

The final Project building and site configuration is unknown at this time. One possible configuration from the DEIR is shown here. The building heights, a portion of the Practical Sailing Area, the Recology and expansion area, and the Executive Park project [2] were added along with the West-Northwest wind lines. To obtain building height above sea level, the figures shown should be increased by 25' to account for the projected finished grade elevation above sea level. The final finished grade elevation is actually unknown at this time but could be substantially higher than 25' according to the DEIR. From the North edge of the Recology area to the South edge of the "Office R & D - 1" use shown, there is a virtual wall of projected approximately 4,200' of intense multi-story or high clear span construction at a minimum of approximately 500' from the water's edge and directly in the path of wind flow from the Alemany Gap to the Resource.

No Contingency Factor For Potential Modeling Error

It seems that using a wind tunnel to analyze a Project of this scale and uncertainty cannot yield the same confidence level as for smaller scale projects for which wind tunnel analysis is typically used in environmental impact studies.

Given the large number of simplifying assumptions and shortcuts that were required to obtain results, one could not be as confident that the Analysis accurately projects the likely impact. These assumptions and shortcuts may have drastically altered the conclusions of the Analysis.

Despite this concern, precise measurements were reported in the Analysis with no reported allowance for modeling error, no sensitivity analysis to reveal the potential effect of modeling errors, and no field testing to demonstrate that the model has any connection to reality whatsoever.

Creating prototype models to assess risk before construction is a reasonable way to mitigate uncertainty. However, if the prototype itself is too uncertain in its ability to represent the actual Project, the result of the modeling effort will be of little value [8]. In professional engineering, a contingency factor is usually considered to deal with unaccounted uncertainty.

2.2 Inaccurate Impact Area

The true impact area at CPSRA, herein referred to as the Practical Sailing Area (Figure 6), is much smaller and closer to the Western shore (along Highway 101) than indicated in the sailing area described in the DEIR. The Practical Sailing Area begins immediately off the shore along Highway 101, which places it at a minimum distance of 500' downwind of the Project Area[1].

Figure 6: Practical Sailing Area
The true sailing area used by most sailors most of the time. Sailing closer to shore mitigates equipment failure hazard, makes returning to shore safer especially when wind speeds drop unexpectedly, and provide smoother water less affected by wind swell. The Practical Sailing Area begins roughly 500' downwind of the Project.

The DEIR identifies a subset of area that can be utilized at CPSRA under certain wind conditions for a certain class of sailor and windsurfing equipment. This area was based on GPS tracks of sailing at CPSRA (see Figure 7). However, this area is not typical given most common wind conditions and the classes of sailors and windsurfing equipment most frequently using the site. Most windsurfing activity takes place within a much smaller range closer to the launch site (see Figure 6).

The overwhelming majority of sailors typically do not venture beyond a smaller area closer to the shore due to hazard of equipment failure, the fact that conditions in these downwind and offshore areas are more affected by larger wind swell, and the difficulty of returning to the launch based on the points of sail possible under typical off-shore wind directions.

On lighter wind days, the stronger winds are closer to the Western shore. On stronger wind days, the smoother water also tends to be closer to the Western shore. Also for winds that are angled more to the North, windsurfing reaches typically terminate very close to the Western shore in order to stay upwind and be able to return to the launch.

[1]All linear measurements in these Comments are approximate but as accurate as possible.

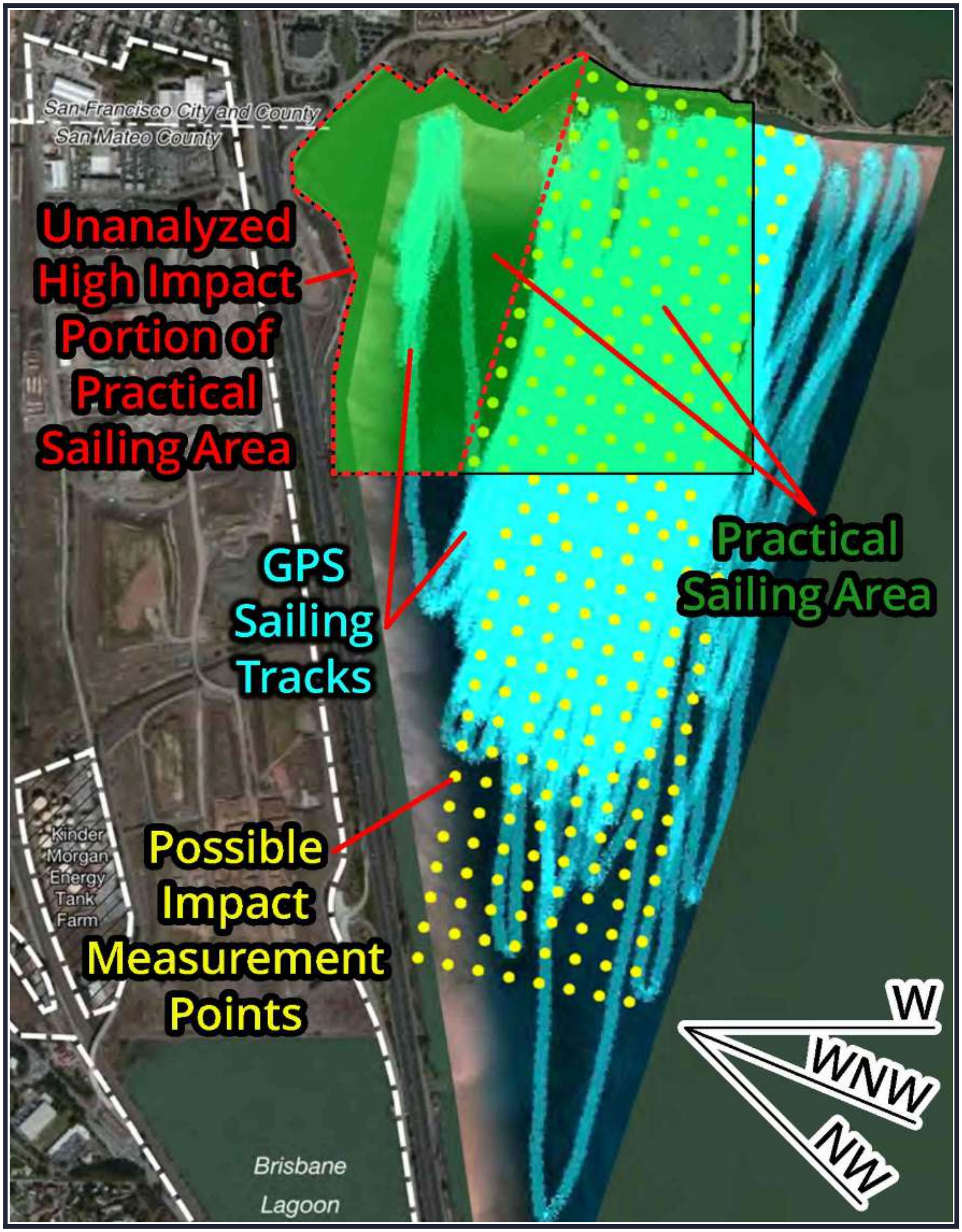

Figure 7: Practical Sailing Area in Context of the Analysis Impact Area
The DEIR used GPS tracks (shown in blue) to inform an impact study area. Possible impact measurement points are shown in yellow. The tracks do not cover the range of wind directions, wind strengths, or equipment common at CPSRA. The tracks cover a possible sailing area for some conditions and equipment, not the exclusive, most practical, most common, or safest area. The DEIR does not assess the entire area covered by these tracks or practically sailable at CPSRA. The unexamined portion of the Practical Sailing Area shown in green would be most impacted by the Project as it is closest. The DEIR took new measurements at only 13 of these yellow points in the Practical Sailing Area on average for each of the primary wind directions (W, WNW, NW).

There is no information about what conditions or equipment were used to produce the GPS tracks. The most regular reach angle recorded in those GPS tracks suggests a West wind. West-Northwest and Northwest winds would reveal a substantially different pattern. The effective sailing area actually shrinks and moves regularly closer to the Western shore for more Northerly prevailing wind conditions.

There is no justification for why the Analysis should only assess some arbitrary sub-area for impacts. For completeness and to be faithful to the public interests, it is just as reasonable to expect that the entire area be examined for impacts, especially considering that the areas that were not examined are closest to the Project and therefore most likely to be negatively impacted.

The Analysis considered some areas that were not covered by GPS tracks, while it ignored other regions that were covered. At best the Analysis starts out with an incomplete and apparently arbitrary area over which to consider impacts.

By comparison, the EIR for the adjacent Executive Park project (approximately 10% the size of the Project) began its wind impact study from the boundaries of that project to an area 1,000' East of the CPSRA launch site, encompassing the entire downwind wake that could potentially impact the CPSRA [2]. The Analysis for this Project does not even attempt to measure any points within 1,000' of the Western shore of the Practical Sailing Area, which would be the area closest to the Project and the most impacted by the Project.

Sailing predominantly within the Practical Sailing Area is not limited to certain types of windsurfing activities or certain skill levels. The Analysis examined a small portion of the total CPSRA sailable area and did not examine those areas most likely to be impacted by the Project. Impact in this Practical Sailing Area is much more critical.

Figure 8: Sailing Upwind at Candlestick
The windsurfer shown above is sailing upwind at CPSRA within the Practical Sailing Area. During stronger wind days such as shown here, smoother water is located upwind. Despite GPS tracks considered in the Analysis that shows sailing in this region, the upwind area closest to the Project and most potentially impacted was largely ignored in the Analysis.

2.3 Sparse and Incomplete Measurement of Potential Project Impacts

Reported measurement of projected impact due specifically to the Project on the Practical Sailing Area was sparse and incomplete. Collectively across the primary wind directions (W, WNW, and NW), less than 25% of the Practical Sailing Area was reported covered by new impact measurement data collected specifically for the Project.

Use of Old Data in Place of New Measurements

To augment the sparse coverage, data from an older EIR [2] that does not model the Project was included. This use of "filler data" was done with the unsubstantiated presumption that it is simply impossible that certain portions of the impact area could be affected by the Project under certain conditions.

This presumption ignores contradictory on-the-ground observations and does not consider the actual Practical Sailing Area being potentially impacted.

Therefore, the conclusions of the Analysis are based to a large extent on measurement data from an EIR that does not model the Project and on large sections of the impact area having no measurement data whatsoever.

Over the 220 acres or more of water area contained in the Practical Sailing Area, zero new impact analysis points were reported for Northwest wind (Figure 9), 12 new impact analysis points were reported for West-Northwest wind (Figure 10), and 28 new impact analysis points were reported for West wind (Figure 11).

Collectively, the new impact analysis data points that were reported cover less than 1/4 of the total Practical Sailing Area for these three primary wind directions.

New Measurements Show Substantial Impact

Notwithstanding the sparse analysis of the Practical Sailing Area, among the reported newly collected measurement data points, negative impacts between 5% and 11% in mean wind speed reduction were shown 58% of the time.

For the desirable West-Northwest primary wind direction, 10 out of 12 of the reported newly collected measurement data points predicted a potential 5% or greater mean wind speed reduction, even though only roughly 1/6 of the Practical Sailing Area was covered by reported measurement data points newly collected specifically for this Project for this primary wind direction.

The Analysis shows increased negative impact closer to Highway 101, yet there are no impact measurement points reported within the Practical Sailing Area within 1,000' of the shore or less meaning some of the most likely impacted areas were not included in the Analysis.

Figure 9: Reported Impact Analysis Points Northwest Wind

Mean wind speed reduction impact reported data points in the Practical Sailing Area from the DEIR for primary wind from the Northwest. No data points were reported for Northwest wind in the Practical Sailing Area. Data points shown are for the 2012 Analysis not including the data from the 2009 Executive Park EIR [2] that does not model the Project as far as we can discern. Percentages refer to change in R-value for the Developer Sponsored Project versus existing conditions.

Figure 10: Reported Impact Analysis Points West-Northwest Wind
Mean wind speed reduction impact reported data points in the Practical Sailing Area from the DEIR for primary wind from the West-Northwest. 12 data points were reported for West-Northwest wind in the Practical Sailing Area. Data points shown are for the 2012 Analysis not including the data from the 2009 Executive Park EIR [2] that does not model the Project as far as we can discern. Percentages refer to change in R-value for the Developer Sponsored Project versus existing conditions.

Figure 11: Reported Impact Analysis Points West Wind
Mean wind speed reduction impact reported data points in the Practical Sailing Area from the DEIR for primary wind from the West. 28 data points were reported for West wind in the Practical Sailing Area. Data points shown are for the 2012 Analysis not including the data from the 2009 Executive Park EIR [2] that does not model the Project. Percentages refer to change in R-value for the Developer Sponsored Project versus existing conditions.

2.4 Vague and Arbitrary Modeling Assumptions

It is unclear what aspects of the Project were modeled in the Analysis. Little detail was provided as to what was included in the model.

In an apparent attempt to deal with the limitations of the wind tunnel, it appears that important portions of the upwind or adjacent topography were not accounted for at all. The Analysis does not model the complex interrelationship of features of the entire system and surroundings even though it states that the cumulative impact on the Resource could be higher. It could not accomplish this because the wind tunnel physically did not allow the Project to be modeled as a complete system but rather required the model to be analyzed in separate pieces.

Due to the chaotic nature of wind and scope of the Project, it is practically impossible to accurately represent the multitude of factors that include channeling wind at different primary directions within the area modeled due to complex topography, micro-systems of persistent vortices, eddies, and wind shadows, variance according to temperature and source of the wind (high pressure gradient or thermal gradient), the impact of substantial wind swell on turbulence [15], the impact of local thermal variation caused by development (e.g. "heat bubbles" due to large areas of paved surface), thermal induced convection cells resulting in upwelling and turbulent eddies, the different characteristics of the upwind topography and the CPSRA during higher and lower wind conditions, and others.

In discussions with ESA, it was revealed that what was modeled was supposed to be the "worst case" in terms of impact to the CPSRA. It is hard to know a priori what constitutes worst case, especially when the criteria for acceptable use of the Resource is not even defined. There are at least two variables of interest including reduction in mean wind speed and increase in wind turbulence intensity. The relationship between these two variables is complex.

One can imagine approximating the Project with a single large wall the height of which represents the maximum possible building height for the entire Project. Presumably this would result in maximum wind speed reduction impact. Alternatively, one can imagine modeling the Project with a series of buildings of varying heights and gaps to try to achieve the maximum surface roughness. Presumably this would result in the maximum wind turbulence intensity increase impact but not necessarily the largest possible wind speed reduction. In absence of the actual site plan and building details, it is unclear how one can evaluate the "worst case" impacts with only a single model that would simultaneously maximize both of these impact variables.

Modeling an Undefined Project with Certainty

As Project site plan and programming details are not yet defined, it is unknown how the Project could be faithfully modeled without a thorough examination of alternatives, which was not reported. The DEIR presents impact results as if they are the only possible outcome.

In reality, the results are highly dependent on the finished base elevation, actual placement and configuration of buildings, heights, orientations, clusterings, density, massings, regularity, streamlining, on-site and off-site topography, open space, landscaping, impervious surface, surrounding development such as inclusion of the Executive Park buildout and proposed Recology expansion, and other factors that are not known at this time.

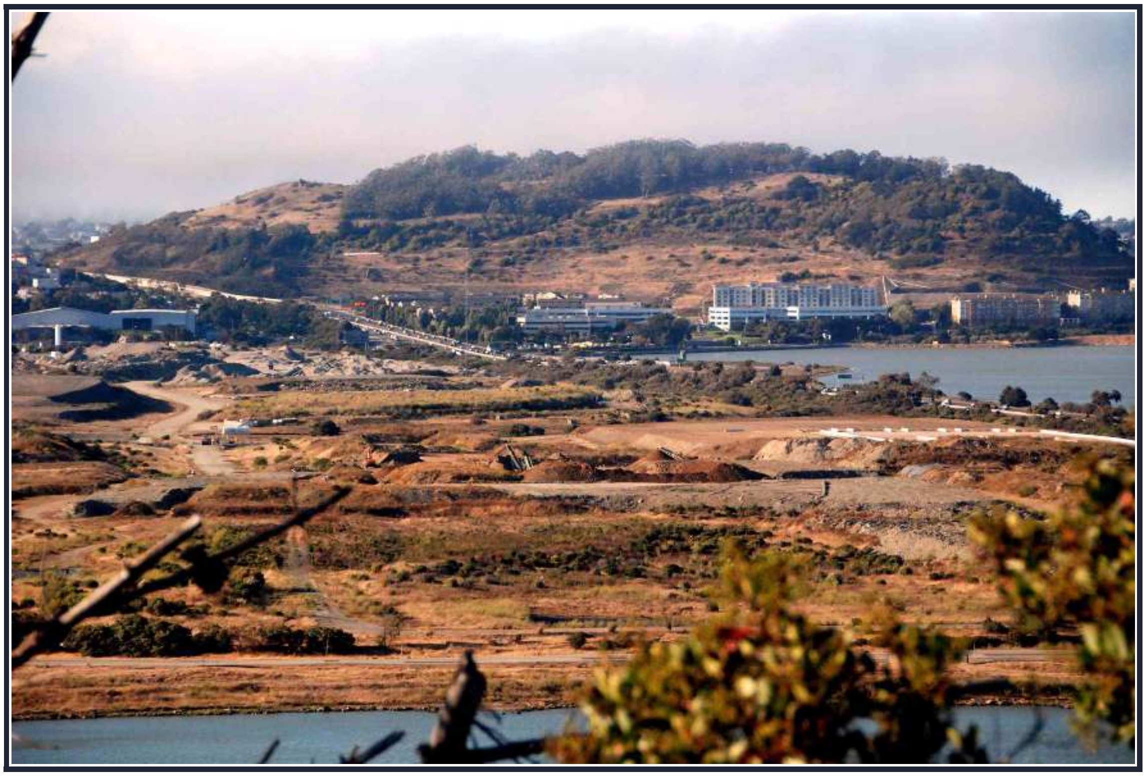

Figure 12: Some of the Existing Upwind Structures and Roughness
The existing upwind conditions include a variety of industrial, commercial, and residential uses in addition to the complex topography including the Alemany Gap and San Bruno Mountain. The current Brisbane Baylands site has been evolving dramatically since 2010 as soil recycling and processing have created mounds of dirt 60' or more from adjacent grades. Modeling this complex topography and surface roughness with the variety of wind sources, conditions, thermal influences, roughness conditions, friction coefficients, seasonal factors, and other components is very complex, especially as the existing conditions continue to change.

Impact Area Not Fully Analyzed

The Analysis does not even attempt to analyze the impact of the Project on certain areas of the CPSRA under certain primary wind directions. The claim in the DEIR that it is impossible under certain wind directions for the Project to have meaningful influence on certain portions of the CPSRA is unsubstantiated and is inconsistent with real observable conditions.

This claim was not verified through field testing, and to our knowledge, none of the results in the model were verified by field testing. It is critical that models of this sort are calibrated and benchmarked to real-world observations to insure they are realistic [7].

The Project and its surrounds is a huge area where wind comes in through the Alemany Gap as well as over and behind the San Bruno Mountain and through the gaps and passes just to the North. Accurately modeling the variety of wind sources through these gaps, the upwind topography, and considering the entire extent of impact on the CPSRA are reasonable requirements that were not fulfilled in the Analysis.

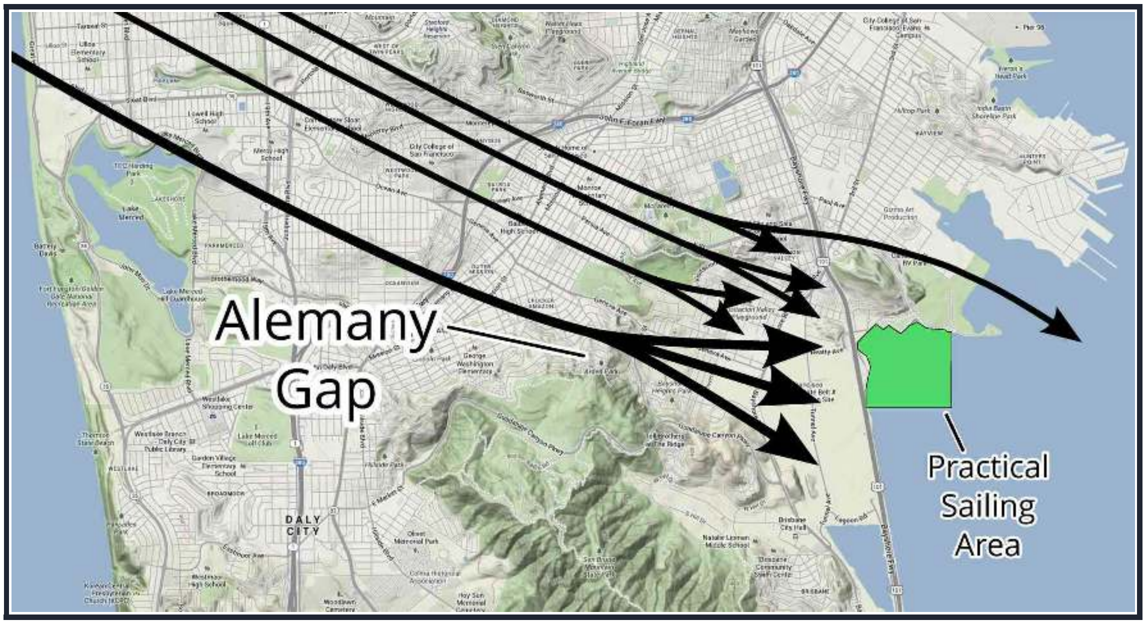

Figure 13: Alemany Gap Wind Funnel
The wind that flows from the Pacific Ocean, over and around Lake Merced, and through the Alemany Gap is the primary wind source for the CPSRA. The Alemany Gap is bounded on the south by the San Bruno Mountain. It is the largest pass through the City of San Francisco. Wind reaches CPSRA from around various passes, hills, valleys, and knobs. Wind at different points in the CPSRA may have arrived through one of many different paths. It is hard to determine which of the several different paths will produce the dominant wind at any specific point in the sailing area. Many factors such as coastal and inland temperatures, wind direction on the coast, pressure gradient, cut-off micro weather systems, and others contribute to the conditions on the water.

It seems likely that these assumptions would cause the Analysis to understate the true extent to which projected impacts under certain wind conditions will be manifest throughout the CPSRA and Practical Sailing Area. Again these assumptions seem as though they had more to do with convenience for modeling the Project and the limitation of the size of the wind tunnel facility that meant the portions of the Project had to be modeled and tested in separate strips.

Over such a large area and with such varied topography including high large knobs, valleys, and mountains in the vicinity, the primary wind direction often changes depending on the location within the CPSRA and Practical Sailing Area. It is well known by sailors at CPSRA that the wind seems to "fan out" of the Alemany Gap creating more westerly flows along the launch shore and more northerly flows towards the shore adjacent to Highway 101. Different maximum upwind points of sail possible throughout the CPSRA demonstrate that it is physically impossible that only a single wind direction prevails for the entire sailing area at any given time.

On some days, the primary wind source is limited to the Alemany Gap. On other days, wind flows over or behind the San Bruno Mountain or more significantly through other passes in addition to the Alemany Gap.

Figure 14: Fog Showing Alemany Gap Wind Patterns
Fog flowing through the Alemany Gap and Visitacion Valley illustrates how the wind that builds along the coast is channeled to CPSRA.

Visible Evidence of Likely Extent of Impacts

Anyone can visit the launch site at CPSRA and view the effects of wind shadows created by upwind structures such as the existing Recology facility or existing upwind topography. Such upwind structures and topographical influence within the Project area could begin as close as 500' West of the Practical Sailing Area.

Figure 15: Upwind Wind Shadows
Large upwind structures such as the Recology trash processing facility create wind shadows that block the wind, creating persistent far-reaching wind shadows or large turbulent wakes. The scale, proximity, and configuration of these upwind structures bear striking similarities to those upwind of Oyster Point Marina and Foster City Lagoon. Office buildings for the likes of Genentech and Visa created wind shadows that forced those sailing sites to be abandoned.

Perturbations in the water are visible from shore or higher vantage points to the West as persistent differences in sun glitter [14] and coloration due to water surface roughness caused by wind flow.

This visible evidences demonstrates both the near and far-reaching influence of upwind structures that is substantially more pervasive and extensive than what is predicted by the Analysis even for existing conditions.

Figure 16: Visible Late Morning Wind Pattern
As wind rises, glassy light-colored water surface turns darker and rougher. Visual inspection of water surface during these transition times reveals how upwind topography affects wind distribution, strength and turbulence.

Visual observation of sailing patterns from shore further confirm the influence of existing upwind features. Dramatic decreases in windsurfing sailing speeds at persistent points in the CPSRA sailing area reveal the effects of the wind shadows and turbulence-inducing upwind features. These wind "holes" are consistent in location. If such disruptions become too common or too large, sailing becomes impossible.

Figure 17: Water Color Patterns Caused By Surface Roughness
Water color reveals surface roughness created by wind flow. Existing upwind topography creates regular substantial longitudinal disruptions that persist throughout the Practical Sailing Area.

Figure 18: Water Color Patterns Caused By Surface Roughness
At a higher vantage point, the variability of existing wind patterns is revealed. Offshore wind near shore is notoriously turbulent and prone to wind shadows and effects of buildings, topography, and vegetation.

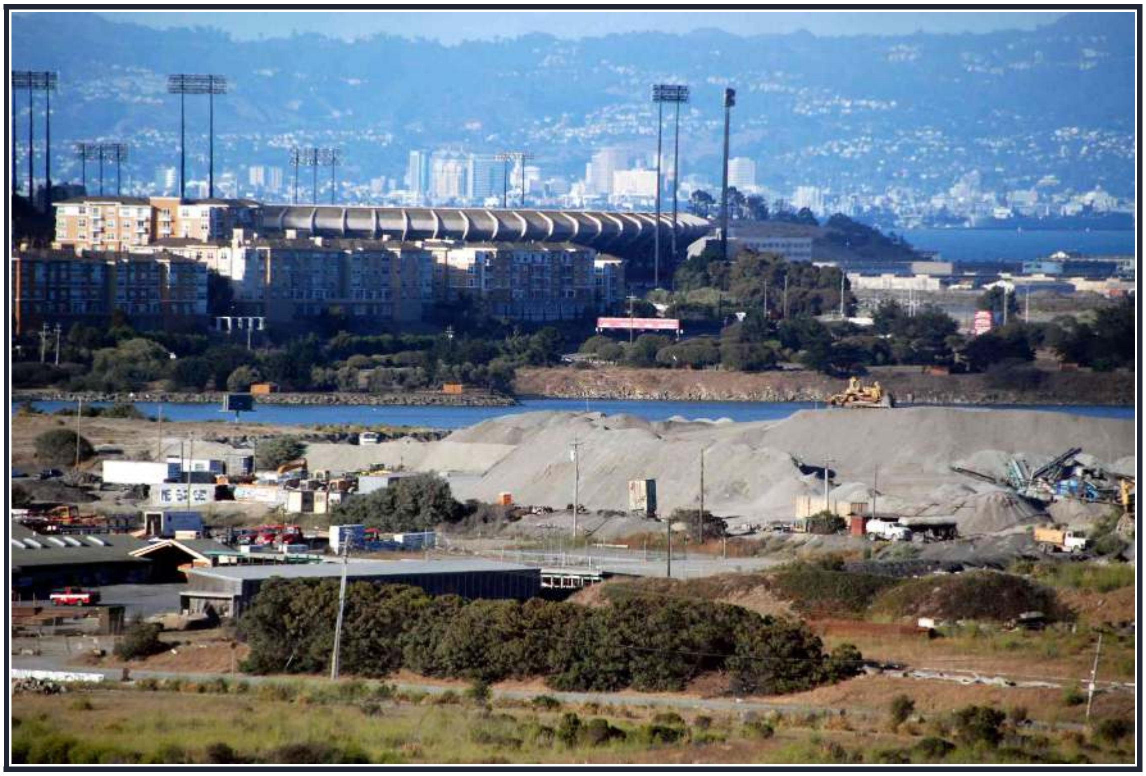

Figure 19: Detail on Existing Upwind Dirt Mounds
Soil processing operations including mounding have already contributed to high turbulence in the Critical Sailing Area that often creates dangerous or impractical sailing conditions.

Additional Limitations of the Analysis Method

Even during a single day many different environmental patterns may occur. The overlap or transition of these environmental patterns is extremely complex. It is also well known that non-stationary wind conditions and seasonal variation introduce complexities that are difficult to model but can be substantial.

Furthermore, it is well known that converting shorter periods of estimates for mean wind speeds to longer periods is not straightforward. The mean wind estimates should be measured for as long as is practical to insure that sampled values span the range of extreme values and converge to an accurate estimate of the true mean. The Analysis was conducted over extremely short periods measured in just a few seconds but extrapolated to consider any other arbitrary substantially longer time frame.

Other issues with the Analysis include using a wind tunnel wind source that does not encompass the wind range for the extreme values regularly experienced at CPSRA. Measurements in this wind tunnel also were done using hot-wire anemometer sensors that are known to have significant biases or limitations under certain conditions. The DEIR acknowledges that the accuracy of these instruments is within 5%. Such a margin is shown herein to have large potential impact on the Resource.

The objective of the DEIR Analysis is not to base a significance claim or lack thereof on presumption or convenient shortcuts. Faithfully and professionally representing the public interest requires engaging in thorough, accurate, unbiased, and representative testing that corresponds to real-world conditions and best engineering practices.

3 Improper Determination of Potential Impact Significance

CEQA guidelines were improperly applied in determining potential significant impacts. An alternate analysis is presented herein.

3.1 Arbitrary and Inappropriate Threshold of Significance

In preceding sections of these Comments, substantial differences were described between this Project in the City of Brisbane and 300 Airport Boulevard in the City of Burlingame. Despite these differences, the threshold for impact significance used in the Project DEIR was substantially or entirely appropriated from the 300 Airport Boulevard DEIR from the City of Burlingame.

This threshold has not been adopted by the City of Brisbane under an official CEQA significance threshold adoption process, has not gone through public review in the City of Brisbane, and does not accurately measure the impact on usability of the Resource as shown below.

The DEIR further states that no universal criteria for acceptable windsurfing activity exists, admitting that "wind standards" of the sort specified by the City of Burlingame are not necessarily transferable.

CEQA requires that the cross-application of such a standard from a source jurisdiction be appropriate for the target jurisdiction. No justification was given for the suitability of such a wind standard for this Project, for the City of Brisbane, and for the Resource.

Relative Wind Speed Reduction is Insufficient Measure

Regarding the significance threshold used by the City of Burlingame, there are two main problems with using relative mean wind speed reduction as a proxy for studying impacts to the Resource:

1. Mean wind speed is just one of many factors in determining availability of the Resource
2. Impacts on availability of the Resource due to changes in mean wind speed are assuredly non-linear[2] [16].

Accepting the logic used in the City of Burlingame threshold would be analogous to implying that a 10% increase in temperature would necessarily cause 10% less snowfall.

Instead of relative change, one must consider absolute pre-impact and post-impact levels of many factors that determine the viability and availability of the Resource.

Basic Requirements of Windsurfing

Windsurfing requires certain minimum lull, mean, and gusts speeds [16] just like aircraft require certain minimum takeoff, stall, and landing speeds [33]. Windsurfing does not operate under the same physics principles as other sailing vessels because of the unique planing hull design and the change in drag that occurs above certain critical speeds (cf. Figure 20).

Windsurfing requires minimum gusts to provide enough impulse to achieve a state of hydro-planing (planing) and perform maneuvers such as turning around; it requires minimum mean speeds to continue in this planing state; and it requires minimum lull wind speeds that are not too frequent such that the windsurfer's momentum would be insufficient to continue planing through the lull.

The behavior of a sailboard below these minimum speeds is dramatically different. The behavior does not change smoothly and proportionally with board speed but changes abruptly at a critical minimum much like at a critical minimum "takeoff speed" an aircraft becomes airborne or below a critical "stall speed" an

[2] Non-linear means that a change in an input factor may not necessarily produce a proportional change in an output quantity.

aircraft cannot stop descending [33].

This planing operating mode of sailboards is very similar to the hydrofoiling state (foilborne sailing) of the America's Cup AC72 catamarans. Minimum speed is required to create hydrofoil lift to offset the weight of the vessel and cargo. Once critical lift has been achieved, the performance and operation of the AC72 is very different from the non-foiling state.

Below planing speeds, the sailboard moves through the water rather than on top of the water and flotation, maneuverability, balance, and the ability to return to the launch or offset tidal currents is severely impacted. If the wind drops below a critical point for too long or too often, it is considered unsailable as too much of the time will be in this sub-planing state. Many sites that have strong wind but possess many regular adversely located wind shadows[3] are effectively unsailable.

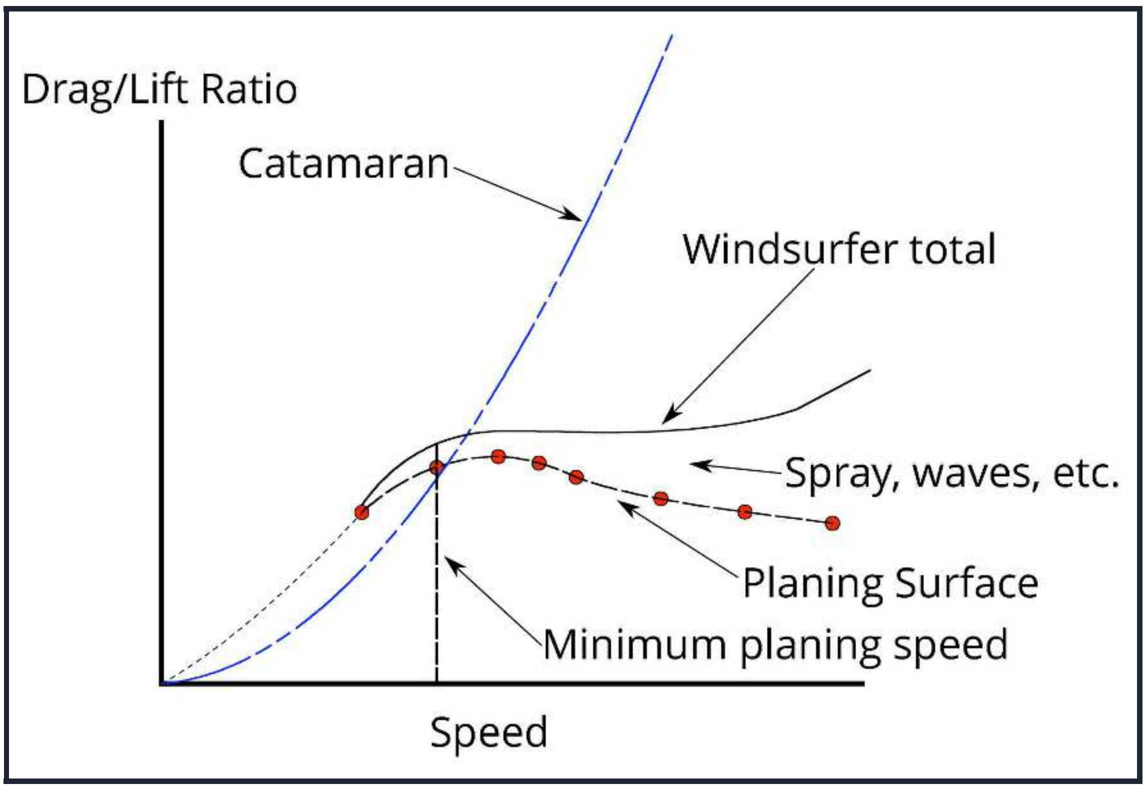

Figure 20: Windsurfer Drag/Lift vs. Speed
Adapted from *An Introduction to the Physics of Windsurfing* lectures by Jim Drake (co-inventor of windsurfing) [16]. Below the minimum planing speed, increased speed increases drag of the windsurfer faster than lift. Above the minimum planing speed, the planing surface (windsurfer hull) begins to experience reduced drag compared to lift as speeds increase. Drag/lift response to speed for a windsurfer is highly non-linear unlike other sailing vessels such as the catamaran profile shown above as well. Relative change in wind speed is not sufficient to determine the ability to continue to achieve a planing state. Furthermore, due to lulls or decreases in mean wind speeds caused by wind shadows or highly turbulent sections, when board speed falls below the minimum planing speed, the sudden reduction in lift can cause an sudden increase in drag and the loss in speed, maneuverability, and flotation will be compounded. More energy is required to achieve the planing state than to keep the planing state.

[3] Wind shadows are extraordinary upwind obstructions that create permanent decreases in wind speed in their wake.

If the regular range of lull-to-gust wind speeds is too severe, as can be caused by high turbulence (cf. [30], [19], [34], [26], [9], [13]), no windsurfing equipment can safely be used to accommodate the range of forces experienced.

Another important consideration is that negative impacts should not only be not too severe, but should also not be too frequent or distributed in such a way as to prevent sufficient uninterrupted use of the Resource. It is not simply a matter of thresholding based on a percentage of sailing area impacted (e.g. a "large portion"), it is critical to consider the actual locations and distribution of these areas.

Gusts and lulls in these Comments refer to the very specific measured quantities known as the maximum and minimum short-term wind speeds within a longer observation. These extreme values are well understood and well studied in wind energy and structural engineering sciences. Gusts and lulls are known to be directly related to turbulence, which is influenced by factors such as surface roughness and upwind obstacles. For more information, see Appendix H.

Figure 21: Planing Windsurfing
Windsurfing operating in planing conditions. Most of the board is lifted above the water. Drag is substantially reduced. Mobility, flotation, and maneuverability is greatly impaired below planing speeds. The ability for a windsurfer to offset tidal effects, avoid obstacles, and navigate back to shore is drastically reduced below planing speeds.

Need for Calibrated Absolute Measurements

The Analysis made no effort to establish critical absolute measurements or thresholds for the Resource but only considered relative changes to a baseline that has not been calibrated to actual sailing conditions. Not calibrated means that the absolute values of a baseline give no information since it is unknown how such values correspond to actual sailing conditions. An uncalibrated value is simply a number.

Each anemometer needs to be calibrated to its sailing location because the exact placement of the anemometer and its operating characteristics make for an unique ability to represent a complex wind system.

For example, there are at least four anemometers that are regularly used to gauge conditions at Crissy Field. The importance and acceptable absolute wind level thresholds of each of these sensors need to be calibrated to prevailing wind direction, season, experience from the past, and other environmental conditions in order to be effective. Using just one of these sensors or using thresholds for one sensor applied to another would give very misleading indications of the true sailing conditions.

Beyond Mean Wind Speed

The Analysis also did not consider the impact on gust and lull wind speeds that is caused by increased turbulence (cf. [30], [19], [34], [26], [18], [9], [13]). These short-term minimum and maximum wind speeds are well studied in the context of wind energy and building loading. The relationship between turbulence-increasing upwind development and gust factors is well known.

To again use the illustrative example of the America's Cup boats, it is crucial for their crew to consider a variety of environmental factors, the absolute not relative levels of each factor, and how these levels compare to known safe operating ranges. Relative mean wind speed (such as "10% windier than yesterday") must be translated to some absolute value (such as "18 knots") in order to be of any use.

In addition to absolute mean wind speed, operating the AC72 safely also hinges on knowing the range of maximum short-term wind speeds known as gusts to avoid precisely the conditions that led to the tragic death of a crewmember this summer [4]. These gust values must also be considered in absolute terms.

The DEIR should not dismiss any level of projected impacts to relative mean wind speed as insignificant. Thresholding the projected change in relative mean wind speed in isolation cannot yield a valid test of significance. There is no way to project the change in availability of the Resource without considering absolute pre-impact and post-impact calibrated wind flow characteristics in the context of reasonable Required Conditions for pre-impact use of the Resource.

3.2 Impacts Projected Using an Appropriate Measure

The chaotic nature of wind systems and the relationship of wind speed to sail force ([20], [17]) mean that even a seemingly small impact in one environmental factor can have a devastating impact on a sailing area.

Understanding Wind Speed Impact on Sail Force

Dismissing a 5% or 10% difference in an environmental factor as arbitrarily "small" is dangerous. This would be akin to describing the difference between 33 and 31 degrees Fahrenheit as insignificant although the difference is less than 10%. Obviously water may freeze at one temperature and may not freeze at the other even though the magnitude of the difference is similarly "small" by some measures. To continue with that analogy, one would also be unable to assess the significance of the two temperatures relative to impact on freezing without considering the atmospheric pressure, presence of solutes in the water, etc.

In the case of windsurfing, the difference in wind force acting on a sail changes quadratically with wind speed. A 10% change in wind speed will produce a change in sail force larger than 10% ([20], [17]). For example, a decrease from 10 mph to 9 mph results in a 19% decrease in sail force[4]. A decrease from 16 mph to 15 mph, while only a 6% decrease in wind speed, results in a 12% decrease in sail force[5].

In addition, the range between lulls and gusts generally increases given higher mean wind speeds and the same wind turbulence intensity. For example, a gust factor of 1.4x would predict gusts of 28 mph for a 20 mph mean wind speed (cf. [30], [19], [34], [26], [18], [9], [13]). After a 10% relative decrease in mean wind speed, the same gust factor would only predict gusts of 25 mph[6]. The decrease from a 28 mph gust to a 25

[4] $1 - 9^2/10^2$
[5] $1 - 15^2/16^2$
[6] 1.4x gust factor applied to a mean wind speed of 18 mph

mph gust results in a 20% reduction in sail force[7].

The reality is even more complex. Typically, a decrease in mean wind speed due to upwind obstruction is met with an increase in wind turbulence intensity (this is confirmed by the Analysis).

To capture the full extent of the potential change in the above example including wind turbulence intensity, consider in addition to a 10% relative mean wind speed decrease, a 10% relative wind turbulence intensity increase is also experienced[8]. This can be accounted for by changing the gust factor from 1.4x to 1.44x[9].

In the above example, the pre-impact lull, mean and gust wind speeds would be in the range of 12, 20, and 28 mph respectively[10]. The post-impact lull, mean, and gust would be in the range of 10, 18, and 26 mph respectively.

So while this change would only suggest a 14% decrease in sail force from gusts, it would suggest a 31% decrease in sail force from lulls. Furthermore, the change would suggest going from pre-impact gusts providing 540% the force of lulls[11] to post-impact gusts providing 680% the force of lulls[12].

	1 Minute Observation			5 Minute Observation			12 Minute Observation		
	Lull	Gust	Sail Force Range	Lull	Gust	Sail Force Range	Lull	Gust	Sail Force Range
$TI_u = 0.10$	16	20	1.6x	15	21	2.0x	14	22	2.5x
$\boldsymbol{TI_u = 0.16}$*****	14	22	2.5x	12	24	4.0x	11	25	5.2x
$TI_u = 0.20$	13	23	3.1x	11	25	5.2x	10	26	6.8x

Table 1: Wind Range and Sail Force Sensitivity Summary

Summary of sensitivity analysis tables showing predicted impact on wind range and sail force range when going from lull wind speed to gust wind speed due to change in turbulence. For example, over a 5 minute period, the difference between experiencing a turbulence intensity of 0.10 vs. 0.20 is the difference between dealing with gust sail force 2x that of lull sail force and dealing with gust sail force over 5x that of lull sail force. Existing conditions from sensor observations shown as "$\boldsymbol{TI_u = 0.16}$*****." The mean wind speed used above is 18. Turbulence intensities are converted to gust factor using the methods described in Appendix H of these Comments. Numbers above reflect effects of rounding.

The conclusion shown by this example is that from a decrease in mean wind speed and an increase in wind turbulence intensity, all critical wind speeds would provide disproportionately less sail force while the sailor would simultaneously have to deal with a much wider range of forces on the sail[13].

Lulls and gusts were not considered in the DEIR, although wind turbulence intensity was considered. Wind turbulence intensity can predict lull and gust values. No such analysis was done in the DEIR.

[7] $1 - 25^2/28^2$

[8] For the purposes of these Comments, an increase in wind turbulence intensity from 0.10 to 0.11 is referred to as a 10% increase in wind turbulence intensity, for example.

[9] $GF' = 1.4 + (1.4 - 1) \times 10\%$

[10] Lulls and gusts relative to a sufficiently strong mean wind speed are treated as symmetric about the mean, which is empirically supported.

[11] $28^2/12^2$

[12] $26^2/10^2$

[13] Windsurfing equipment has a fixed and limited range of wind speeds in which it can be safely and effectively operated.

For more information about lulls, gusts, and gust factors, see Appendix H and the References section of these Comments.

A 5% or 10% difference in mean wind speed around the critical sailability thresholds necessary for a windsurfing site is assuredly important. Such a difference can make or break a decision to commit to a 1.5 hour round-trip drive through traffic. It can mean a successful Sailable Day or a complete waste of time, money, and energy.

Site-Specific Criteria for Sailability

The argument that there are no universal criteria in terms of wind speeds for acceptable windsurfing conditions at all locations is misleading. While it is true that there are no single criteria for all sites, there are absolutely specific criteria for specific locations tied to specific sensors. This is demonstrated by professional forecasting services that predict future sensor values and apply well-known thresholds for predicting future sailable conditions at specific sites.

Each windsurfing location has different requirements for sailability. These requirements include the mean wind speed, range of extreme wind speeds (lulls and gusts), variability in the wind, duration and frequency of the lulls and gusts, temperature, altitude, humidity, length of unobstructed sections of wind exposure, length of reaches, topographical constraints and obstructions, amount and direction of swell or chop in the water, tidal currents, and other factors. The precise relationships between these factors and the operation of a sailing vessel are well-studied in aerodynamic, hydrodynamic, and marine engineering (cf. [20], [17], [16]).

While the DEIR does not consider such standards, it is clear that such standards can be defined. For example, in the related field of AC72 racing, the 34th America's Cup Regatta provided clear minimum and maximum wind ranges that were specific to time of year, tidal condition, and sea state [29]. These standards were relative to local sensors that had been calibrated and thresholded based on the experience of sailors operating at the racing site.

Appropriately Measuring Absolute Impact on Resource Availability

To meaningfully relate relative wind flow changes to absolute post-impact change in the availability of the Resource, several steps are required:

1. Identify a data source that measures absolute levels of wind flow that is calibrated and correlated with on-the-ground conditions at the Resource
2. Establish thresholds of these absolute wind flow levels to determine Required Conditions for use of the Resource prior to impact
3. Select either a historic set of the data or a projection of future data with which to assess impacts
4. Determine the pre-impact availability of the Resource by applying the Required Conditions to the selected data
5. Determine the post-impact availability of the Resource by applying the relative wind flow changes to the selected data and reapplying the Required Conditions to the modified data
6. Compare the change in pre-impact and post-impact availability of the Resource

The DEIR includes none of these steps in the Analysis. However, these steps were performed in a "Sailable Day Impact Analysis" and reported in these Comments. Each step in this Sailable Day Impact Analysis is described below:

Identify a data source that measures absolute levels of wind flow that is calibrated and correlated with on-the-ground conditions at the Resource

In the case of the CPSRA, the single most representative measure for the condition of the Resource is an anemometer maintained by Weatherflow, Inc [35] for the CPSRA. Historic data from this CPSRA Sensor served as the data source required for the Sailable Day Impact Analysis.

CPSRA Sensor data points include lull wind speed, mean wind speed, gust wind speed, observation time, and wind direction. The CPSRA Sensor is calibrated to the Resource such that users of this Resource have intimate knowledge of how the absolute levels of various readings of this sensor correspond to specific on-the-ground sailing conditions.

The CPSRA Sensor is operated by the same company and provides the same level of information as the sensors used in the recent 34th America's Cup Regatta [28].

Establish thresholds of these absolute wind flow levels to determine Required Conditions for use of the Resource prior to impact

A set of absolute minimum Required Conditions for wind flow for a Sailable Day at the Resource relative to this CPSRA Sensor was obtained through a survey of local experts who collectively use the Resource thousands of times per year. These Required Conditions are conservative and reasonable.

Two sets of Required Conditions were considered in the Sailable Day Impact Analysis. One set of Required Conditions included only minimum mean wind speed. The second set included minimum mean wind speed, minimum lull wind speed, and minimum gust wind speed.

These Required Conditions are similar to those used by the 34th America's Cup Regatta in determining minimum acceptable as well as maximum safe racing conditions [29], [28].

> *A Sailable Day is one on which there exists a two-hour window somewhere between the hours of 12pm and 7pm local time containing CPSRA Sensor observations such that 75% of the observations during that two-hour window are Sailable Observations.*
>
> *A Sailable Observation is a CPSRA Sensor observation with a minimum lull wind speed of 10 mph, a minimum mean wind speed of 16 mph, and a minimum gust wind speed of 20 mph and a wind direction either West, West-Northwest, or Northwest.*

Figure 22: Definition of Required Conditions for a Sailable Day

This definition is based on actual historic data, analysis, surveys of the general public who use this resource, and information by expert weather forecasters. It is specific to CPSRA and tied directly to the CPSRA Sensor and its operating parameters. The definition is not transferable to any other sensor or any other sailing site.

Select either a historic set of the data or a projection of future data with which to assess impacts

Three years of historic anemometer CPSRA Sensor data was utilized (years 2011, 2012, and 2012 and months from April through September) [35].

Determine the pre-impact availability of the Resource by applying the Required Conditions to the selected data

Table 2 shows the number of Sailable Days per month and year by applying the Required Conditions to the three-year historic data set.

Determine the post-impact availability of the Resource by applying the relative wind flow changes to the selected data and reapplying the Required Conditions to the modified data

Average impacts of 5% and 10% decrease in mean wind speeds and 5% and 10% increase in wind turbulence intensities[14] were considered as scaling factors to the historic data set. These scaling factors were applied to wind flow data points in the three-year historic data set. The Required Conditions were then reapplied. A sensitivity analysis approach was taken to isolate the impact of different degrees of potential wind changes and different degrees of Required Conditions strictness.

Regarding the selection of 5% and 10% scaling factors, 58% of data points reported in the Analysis for impacts to the Practical Sailing Area that were newly measured to account specifically for the Project show a 5% or greater mean wind speed reduction. Furthermore, the Analysis only measures new impact data points covering less than 25% of the Practical Sailing Area. The uncovered portions of the Practical Sailing Area with no new measurement data points are generally to the West and closer to the Project. According to the Analysis, impacts will be more severe closer to the Project.

This method of scaling historic data and re-applying the Required Conditions to assess impacts to a quantity such as Sailable Days is sanctioned by the reporting of relative wind flow changes in the DEIR. The DEIR states that the projected relative impacts can be applied to any baseline conditions to obtain projected absolute impacts.

Compare the change in pre-impact and post-impact availability of the Resource

Table 3 shows the changes that would have occurred over the past three years under a variety of possible applications of the projected impacts. This method of considering a range of possible impacts is called a sensitivity analysis and is meant to show a range of "best-case" to "worst-case" outcomes. A sensitivity analysis is more appropriate given the uncertainty involved here than projecting a single definitive outcome with no contingency factor as was done in the DEIR.

By considering the most conservative impact scenario of a 5% reduction applied to mean wind speed only, it was found that the number of average annual Sailable Days was reduced by 9%.

By considering a 10% reduction applied to mean wind speed only, a 20% reduction in Sailable Days was found.

By considering the same 5% and 10% wind speed reductions applied to lulls and gusts in addition to mean wind speeds (as is empirically supported by the models detailed in the Appendices to these Comments and by models used to study extreme values as found in [30], [19], [34], [26], [18], [9], and [13]), a reduction in Sailable Days of 22% to 44% respectively was found.

By keeping all data points unchanged except adjusting the lull values so that the lull-mean range was expanded by 5% or 10%, a reduction in Sailable Days of 15% to 16% respectively was found. This method of considering the increase in wind turbulence intensity by a direct proportional scaling of the lull-mean range is supported by models as found in [30], [19], [34], [26], [18], [9], and [13].

[14] For the purposes of these Comments, an increase in wind turbulence intensity from 0.10 to 0.11 is referred to as a 10% increase in wind turbulence intensity, for example.

		Days Sailable	Mean	Lull	Gust	Lull-Gust Range	Lull-Mean Range	Mean-Gust Range
April	2011	12	20	12	28	16	8	8
	2012	14	18	11	25	14	7	7
	2013	20	18	12	24	13	7	6
May	2011	15	20	12	28	16	8	8
	2012	19	19	12	25	13	7	6
	2013	22	19	12	26	14	7	7
June	2011	9	19	12	26	13	7	6
	2012	19	19	12	26	14	7	7
	2013	17	19	12	25	13	6	7
July	2011	13	18	11	23	12	6	5
	2012	10	17	11	22	11	5	5
	2013	12	17	11	23	12	6	6
August	2011	3	17	12	21	9	5	4
	2012	13	17	11	23	11	6	5
	2013	13	18	12	26	14	6	7
September	2011	15	17	11	22	10	6	5
	2012	11	17	11	21	10	6	5
	2013	18	18	12	26	14	6	7
2011		67	19	12	25	13	7	6
2012		86	18	12	24	12	6	6
2013		102	18	12	25	13	6	7
All Years		255	18	12	25	13	7	6

Table 2: Sailable Days Existing Conditions (Base Case)

No adjustment to observed wind speeds. All wind speed values and ranges are averages over the specified time period. *Mean* is the average wind speed during an observation, *lull* is the minimum short-term wind speed during an observation, and *gust* is the maximum short-term wind speed during an observation. Each range is an average difference between the indicated variables during each included observation. The averages include only observations for days that are determined as sailable and within those days, only observations that qualify as sailable within the first two hour sailable window. The threshold for a sailable observation is lull minimum 10, mean minimum 16, and gust minimum 20 along with direction W, WNW, or NW. The threshold for a Sailable Day is a day having at least a single two hour window starting at 12pm and ending at 7pm such that 75% of the observations within the window are sailable. All wind speed values are in miles per hour. Some sums may not reconcile to their constituents due to rounding.

3.3 Significance of Resource Availability Impact

For unique, valuable, and irreplaceable recreational resources, reductions of availability of 10% or more have been considered to be significant under applications of CEQA guidelines.

These Comments make clear that applying such a threshold to relative mean wind speed reductions is nonsense. Impacts to mean wind speed are not the same thing as impacts to availability of the windsurfing Resource. Mean wind speed and windsurfing Resource availability are two different things. Changes to mean wind speed do not necessarily cause proportional changes to windsurfing Resource availability.

However, it is reasonable and meaningful to apply this threshold directly to impacts on actual availability of the Resource based on established Required Conditions as they currently exist.

The Sailable Day quantity defined above adequately measures the availability of the Resource. Projected changes to this quantity directly project the change in availability of the Resource.

The Sailable Day Impact Analysis reported above projects a 9% to 44% decrease in Sailable Days using realistic requirements, analysis methods, and measurements reported in the DEIR.

Based on these findings, it is clear that there is strong potential that the Project as currently described without mitigation would likely have a significant impact on the Resource.

	Average Days Sailable Per Year	Loss of Days Sailable Compared To Existing Conditions
100% of Lull, Mean, Gust Wind Speeds*	**85**	**-**
95% of Lull, Mean, Gust Wind Speeds	68	-17 (-20%)
90% of Lull, Mean, Gust Wind Speeds	48	-37 (-44%)
95% Adjustment to Only Mean Wind Speeds	77	-8 (-9%)
90% Adjustment to Only Mean Wind Speeds	66	-19 (-22%)
5% Increase of Lull-Mean Range	72	-13 (-15%)
10% Increase of Lull-Mean Range	72	-13 (-16%)

Table 3: Sailable Day Impact Analysis Summary

Summary of sensitivity analysis tables showing predicted impact on days sailable from mean wind speed reductions and wind turbulence intensity increases. Existing conditions from sensor observations shown as "100% of Lull, Mean, Gust Wind Speeds*." "Loss of Days" means average annual loss of Sailable Days over the past three years of data analyzed compared to existing conditions. Numbers above reflect effects of rounding.

These projected reductions in Sailable Days, summarized in Table 3, represent a critical and as yet unmitigated threat to the availability and continued viability of this Resource.

4 Windsurfing Sensitivity to Development

The reality is that very few outdoor recreational activities are so impacted by human development than near-shore wind-oriented activities. Windsurfing is incredibly sensitive to environmental conditions and suffers immensely from an increase in turbulence, the introduction of wind shadows, and reduction in mean speeds.

4.1 Special Risk to Off-Shore Wind Sites

Many instances of upwind development have damaged or rendered downwind activities unusable in off-shore wind locations. The infamous case of Aruba, for example, demonstrates how the positioning of hotels along the beach can decimate nearby windsurfing serviced by off-shore wind flow (Figure 23). Even a 1/2 mile offshore, windsurfing in the wake of these hotels is almost impossible. Though wind does pass between the buildings, the wind speeds regularly range from nearly zero to 30 mph in a matter of a few feet along a reach. The minimum reach of unobstructed wind flow is not sufficient to sail. By contrast, the minimum distance between the Project and the Practical Sailing Area is roughly 500'.

Figure 23: Palm Beach, Noord, Aruba
Aruba windsurfing is world famous. It is the home training location for the top-ranked female freestyle windsurfer in the world (Sarah-Quita Offringa) and hosts annual windsurfing and kitesurfing racing and other competitions drawing entrants from the entire Caribbean region. Steady trade winds blow continually throughout the summer months. However development along Palm Beach (shown here) and Hadikurari Beach (to the North) has made windsurfing in the shadow of these buildings nearly impossible. Even low structure and vegetation is immediately distinguishable by the lulls and gusts that they create along ever shortening reaches.

Most remaining sailing locations in the Bay are shielded from potential damage due to shoreline development. This is because the wind source at most sites is on-shore or side-on-shore or there is an accessible "wind line" at a distance of a few hundred yards (e.g. Treasure Island, Crissy Field) to a few miles (e.g. Third Avenue). Candlestick, being one of the few remaining windy off-shore sailing locations, is extremely susceptible to shoreline development. Clean off-shore wind is highly desirable as it keeps wind swell from accumulating so the water state remains relatively calm even in high winds.

Simplifying assumptions used in impact modeling, the lack of contingency factors to account for unmodeled effects, or simply indifference can have devastating consequences on off-shore windsurfing locations. As evidence of this, consider how some former windsurfing sites near to CPSRA have been dramatically impacted by adjacent development. Despite tremendous accessibility and former regular use, sites such as Oyster Point Marina and Foster City Lagoon have been rendered unsailable due to upwind office building construction.

It is critical to avoid the mistakes that have been made in the past in projected impacts. Good engineering practice demands that modeling assumptions be realistic and validated with on-the-ground observations, that a sufficient nexus between the quantity being measured and the actual resource be established, and that a contingency factor for unmodeled effects is included. In our review of the DEIR, we found none of these provisions were included.

4.2 Importance of the Bay Area to Windsurfing in the United States

In the continental United States, only a handful of locations provide the right combination of steady strong wind, accessible and sufficient water, and proper temperature for windsurfing. The San Francisco Bay Area, the Columbia River Gorge in Oregon, Cape Hatteras in North Carolina, Corpus Christi area in South Texas, select locations on the Great Lakes, Lake Isabella in Southern California, and Long Island and Cape Cod on the Northeast Coast comprise nearly the entire list of regions that have more than a few sailable days per year. Within this list, the San Francisco Bay Area undoubtedly provides the highest number of high quality sailable days per year.

4.3 Importance of CPSRA to Windsurfing in the Bay Area

Within the San Francisco Bay Area, Candlestick point has been well known for over 30 years as one of the most consistent, most accessible, and most accommodating windsurfing spots for beginners, intermediates, and experts. It is one of only three windsurfing locations in San Francisco County and is the only one of the three sites that is not affected by tidal currents or dangerous shipping channels. Out of the entire Bay Area, only eight other sites provide usable access and fairly regular sailable conditions. See Table 4 for details.

Site	County	Current or Water Level Restrictions	Skill Level	Water Condition	Boats or Stranding Hazards	Sailable Frequency
Candlestick	S.F.	None	All	Flat	None	Very High
Crissy Field	S.F.	Current	Expert	Very Choppy	Both	Medium
Treasure Is.	S.F.	Current	Expert	Very Choppy	Both	Seasonal
Third Ave	San Mateo	Both	Expert	Large Swell	Both	Medium
Coyote Pt.	San Mateo	Current	All	Chop/Swell	Stranding	Medium
Berkeley	Alameda	None	Beg - Int	Choppy	None	Low
Alameda	Alameda	Level	Beginner	Small Chop	None	Very Low
Pt. Isabel	Alameda	Current	Intermediate	Choppy	Stranding	Low
Larkspur	Marin	Level	Int - Exp	Choppy	Boats	Low

Table 4: San Francisco Windsurfing Locations
Of the nine San Francisco area sailing locations, Candlestick provides by far the highest number of high quality windy days regularly serving all skill levels without tidal concerns or hazards. It is also one of only three locations in San Francisco County. East Bay sailing sites have far weaker winds and much rarer adequate conditions. Other locations are seriously impacted by tidal restrictions, hazards, or limitations on required skill. Former sailing sites such as Oyster Point and Foster City Lagoon have been eliminated by upwind development. Only windsurfing launches in the vicinity that have frequent acceptable sailing conditions are shown. See [21] for more information.

On average, 85 Sailable Days per year (from April through September) are frequented by on average 20 sailors per Sailable Day. This past year (2013) saw 102 Sailable Days, far and away exceeding the number of sailable days at any other site around the Bay. Frequency of Sailable Days derived from recent CPSRA Sensor data is shown in Table 2.

The site is uniquely suited to all skill levels. Children in their early teens as well as seniors in their 70's regularly use this site. This site is also a training location for some of the world's best sailors including US National Champions Wyatt Miller, Tyson Poor, and Bryan Metcalf-Perez and World Top-10 ranked Freestyle sailor Phil Soltysiak. An on-line record of sailability of various San Francisco area locations is accessible through iWindsurf.com.

CPSRA is special because it has an amazing confluence of desirable factors found no where else in the Bay. The water condition is amazingly flat despite having some of the best winds in the Bay. This is because the winds are largely offshore, which prevents wind swell from building in the sailing area. By contrast, most other sites in the Bay suffer from unbuffered exposure to the swell and choppy conditions that predominate the Bay by virtue of the winds, topography, and boating traffic.

Candlestick's consistent winds are fed by the well-known topographical feature referred to as the Alemany Gap, which funnels wind like a wind tunnel directly from the Pacific Ocean. In the Spring, Candlestick is fed by strong Northwest wind weather systems. In the late summer and fall, thermal pressure gradients between the cooler Pacific Ocean and warmer inland valleys create a reliability that borders on clockwork. Very often, Candlestick will be the ONLY windy site in the Bay Area accessible within a reasonable distance.

Other factors that distinguish Candlestick include the fact that it is not dependent on tidal conditions. Virtually every other site in the Bay requires either a minimum water depth or tidal current direction (ebb or flood) in order to be sailable. This has the effect of eliminating many other sites from being sailable on days even when there is wind. Crissy Field, Treasure Island, and 3rd Avenue are typically only sailed during ebb tides. Sites such as Sherman Island are often only sailed on the ebb tide or during especially strong winds. Many of the sites in the North and South Bay are too shallow during low tides due to silt accumulation near the launches. Sites in the East Bay are much less windy in general. When these tidal conditions are adverse during favorable wind periods (typically mid-afternoon), the site is not sailable. However, Candlestick has plenty of water for safe sailing at even extreme low tides and because of the topographical configuration of the sailing area, it does not suffer the extreme limiting currents that accompany ebb or flood conditions at many other sites.

Finally, Candlestick is centrally located so as to service sailors regularly from the North Bay, East Bay, South Bay, Peninsula, and the City of San Francisco. It is at most a 45 minute drive for sailors coming from any of those areas even in most high-traffic periods.

In summary, Candlestick is a keystone to Bay Area windsurfing. No other site in the Bay Area provides such most universal access to high quality conditions on a such a frequent and dependable basis.

Figure 24: Crissy Field Sailing Boating Hazards
Ocean liner freighters such as the one shown here include some of the many boating traffic hazards with which sailors in other sites around the Bay must contend. Ferries, commercial fishing, freighters, recreational traffic, and other vessels are commonplace throughout many locations in the Bay. Candlestick is a shallow basin that receives virtually no boating traffic.

5 Recommended Mitigation for Potential Project Impacts

There are five categories of mitigations proposed in these Comments. All are based on actual requirements used in other EIR and planning documents.

5.1 Site-Specific Final Wind Analysis Studies

Other projects for which similar wind tunnel wind impact studies were conducted were much smaller projects for which specific building footprints and site plan configurations were known or mostly known. Some of these other projects even had elevation sections or orientation and streamlining details depicted for analysis and consideration.

This Project, by contrast, is an order of magnitude larger and less defined. For this reason, the confidence level of the results of the Analysis must be less than for these other projects.

To ensure the same minimum confidence standards of other EIR analyses, prior to specific development within the Project, final wind impact analyses should be conducted to examine the individual development impact along with the surroundings, cumulative development programmed and approved up to that point, and future Project details as well as they are known at that time. These subsequent analyses should be directly tied to the impact on usability of the Resource as it exists today rather than thresholding a related but indirectly connected factor, such as wind speed.

5.2 Alemany Gap Wind Flow

The primary source of wind for the Resource is the Alemany Gap. This topographical feature channels and accelerates wind from the Pacific Ocean directly to CPSRA. Obstructions in the path of flow through and beyond the Alemany Gap would have the most impact on the Resource.

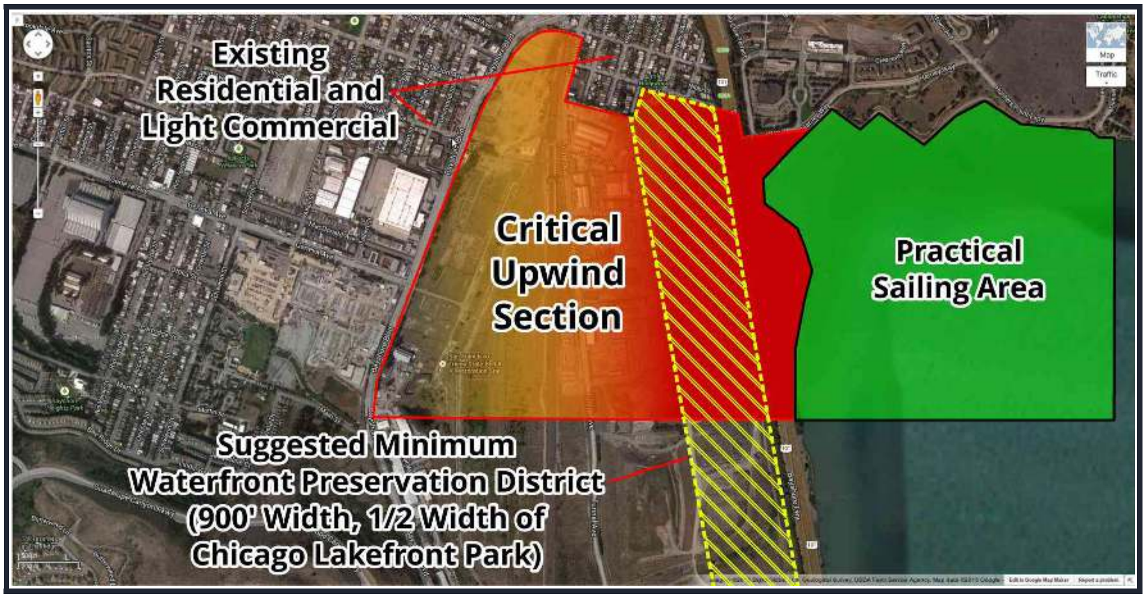

Figure 25: Critical Upwind Section and Proposed Waterfront Preservation District
The Critical Upwind Section and the proposed minimum Waterfront Preservation District immediately upwind of the Practical Sailing Area and downwind of the Alemany Gap. The waterfront is currently a mix of industrial operations but is slated in some proposed plans to be barricaded by a virtual wall of development up to 200' above sea level in some locations according to the DEIR. The Waterfront Preservation District shown at 900', which is half of the width of the Chicago Lakefront Park System. This figure includes areas outside of the Project scope to show non-residential areas that could also developed or redeveloped in the future into commercial or industrial uses.

- The minimum Waterfront Preservation District shown should established with only low vegetation and structures and minimal topographical variation or rise above sea level
- Filtration and catchment systems can be introduced in the Waterfront Preservation District to comprehensively filter and improve runoff and reduce litter that ends in the Bay
- All new development including building and parking areas should be located and clustered outside the Critical Upwind Section as much as possible or as far to the West and South as possible
- Vegetation, other structures, and topography that would present an impediment to wind flow or increase surface roughness should be kept at very low heights and uniform roughness to minimize increased wind turbulence
- Impervious surface area should be kept to an absolute minimum to avoid creating thermal conditions that create convection cells or otherwise interfere with the natural flow of wind through this area
- All industrial processes with the potential for discharging odor, dust, pollution, or other air or water quality impact should be prohibited from this area
- Trip generation that would result in diesel discharge or other air quality impact in this area should be discouraged

Project areas closest to the shoreline should be devoted to a substantial public open space to ensure the accessibility and utility of the shoreline for all. Such public access is critical to a successful waterfront development.

Figure 26: Olympic Sculpture Park, Seattle

Another excellent example of waterfront development is the Olympic Sculpture Park in Seattle. It is a nine acre park on a former brownfield industrial site but is now one of the only green spaces in Downtown Seattle. The site is award-winning and has been called “the best thing to happen to Seattle in years” (Frommer’s travel guide). The potential scale of public waterfront preservation space on the Baylands is an order of magnitude larger.

5.3 Architectural Requirements

In addition to minimizing or eliminating impact in the Critical Upwind Section and proposed Waterfront Preservation District, the following architectural requirements are recommended to mitigate potential impact caused by development activities outside of no-build and open-space areas:

- Building heights and massing should be stepped such that the heights closest to the Bay are minimum and the heights rise as development proceeds West to reconnect air flow to the surface as gradually as possible
- Maximum building heights, topography, and other impacts to wind flow relative to mean sea levels should not exceed the current levels of the so-called “Brisbane dirt mounds”
- Structures should be oriented and streamlined to present minimal wind obstruction and minimal increase in wind turbulence consistent with similar efforts in other nearby jurisdictions
- Overall surface roughness impacts created by development activities should be kept to an overall minimum

- Vegetation should be limited in height and scope to avoid creating additional surface roughness, sudden interruptions in wind flow, or exceptional height

Buildings and substantial development should begin to the West and should be stepped in height so that a wall of development does not obstruct views and access of the shoreline and wind flow to the Resource. This is a practice adopted along many of the most successful waterfronts in the largest cities. Parts of San Francisco's Embarcadero district provides an example of such stepped massing.

Figure 27: Litter from Industrial Operations

5.4 Use Limitations

Figure 28: Discharge of Dust and Particles
High winds carry pollutants throughout the air, water, and land downwind in the vicinity of the Project.

The steady strong winds in this site mean that air quality is particularly sensitive. Hundreds of complaints have been registered against odor and litter created by the existing Recology facility in this vicinity (Figures 33, 29, 27, and 30). This odor is created by transportation and processing of waste material (Figure 32). Litter is created as bits of waste are discharged onto roads and open space and carried by the wind ultimately to the Bay. The "dirt mounds" on this site that process and recycle dirt and construction material create an incredible dust discharge if uncontrolled (cf. Figures 31 and 28). This use also demonstrates the sensitivity of air quality given the high winds.

Users such as Recology have made promises in this and other jurisdictions but have failed to live up to promises. Part of this is due to the limited ability to monitor and enforce such vague but damaging concepts as "odor." See, for example, [32] and [23], which discuss the high expectations and grandiose promises that have led to disgust, anger, and disappointment among the public.

The vast quantities of litter, dust, and incredibly frequency of wide-ranging noxious odor indicate that monitoring and enforcement is simply not working. The existing users have demonstrated how easy it is to circumvent the numerous layers of regulations designed to prevent just these types of abuses. For this reason, it is strongly recommended that these uses not be promoted in this area. Such polluting users are incompatible with the ecologically sensitive and residential surroundings.

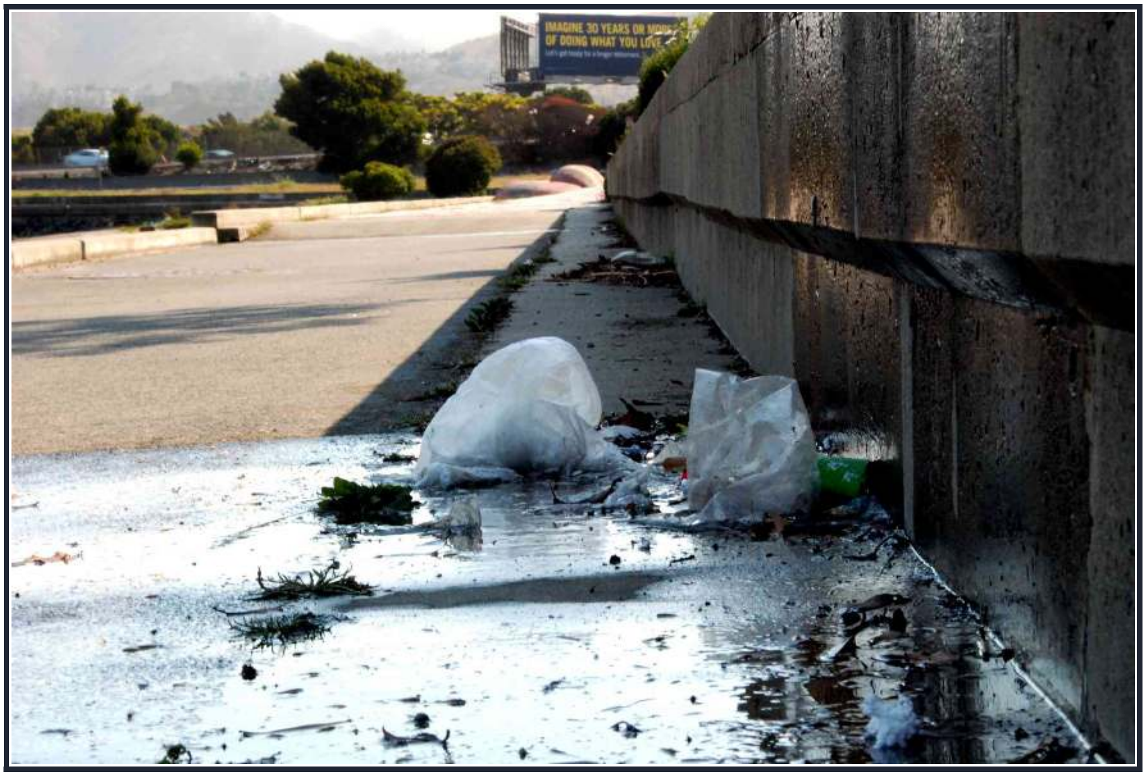

Figure 29: Litter from Industrial Operations

As demonstrated by the discussion above, because of the high winds and proximity to the ecologically sensitive resource, the following restrictions are recommended:

- Uses that have will create odor, litter, dust, gas, fumes, irritants, particles, or exhaust either into the air or Bay should be prohibited
- Any such use that has the potential for such pollution should require a separate EIR process with a qualified expert to review the specific potential impact
- This also includes air turbines or other power generation facilities that could create additional wind turbulence or substantially alter the thermal dynamics of the Project area
- Existing violators should be brought into compliance before any further facility is considered
- Any use with the potential to generate long-ranging exceptional pollution of the sort discussed above should have specific monitoring provisions, budgets, thresholds, enforcement resources, penalties, and condition for use permit revocation and renewal

Figure 30: Litter from Industrial Operations

5.5 Funding for Monitoring, Testing, and Enforcement

Due to the proximity of possible intense industrial and commercial uses to existing and proposed residential and the San Francisco Bay, it is urged that special separately funded locally-administered monitoring, testing, and enforcement programs be established. The on-going funding for these should come from part of the revenue that the City of Brisbane and others will gain from the additional taxes and fees. It is anticipated that the proposed Recology expansion alone could generate hundreds of thousands or even millions of dollars in revenue for the City of Brisbane.

Locally Funded and Administered Monitoring, Testing, and Enforcement

Figure 31: Discharge of Dust and Particles
High winds carry pollutants throughout the air, water, and land downwind in the vicinity of the Project.

The City has recently experienced difficulties enforcing air quality problems with existing industrial users operating currently on the Baylands. Dust and particulates have been discharged regularly over and into the Bay for years in violation of air quality ordinances (see Figure 31). Numerous citations have been issued by authorities but the problem has continued unabated.

A recent thorough examination by the City of the circumstances that led to this situation revealed that a history of non-enforcement and lax specificity in permits were to blame [11]. Brisbane is a small city without the resources of its larger neighbors. It should take special measures to learn from this recent experience to ensure that future generations will not face similar aggravation, hazards, and difficulties.

Other regional enforcement agencies such as the Bay Area Air Quality Management District should not be expected to fill this responsibility. Those agencies are sorely overtaxed and do not have the resources or specific technology needed to institute monitoring systems. They also do not have the fine-grained enforcement authority needed to apply specific penalties to specific infractions.

In conversations with BAAQMD, it was revealed that they have no specific criteria to apply in determining when enforcement becomes an issue for things such as dust discharge or odor. They stated that they only take action “when the violation becomes a public nuisance.” “Public nuisance” is not defined and is generally based on “how many people file complaints.” At the time of this writing and to the best of our knowledge, there is one single BAAQMD field agent responsible for the entire San Francisco County.

Specific Difficulties with Existing Odor

Figure 32: Discharge of Odor
The Recology processing facility creates incredible noxious odor. Hundreds of complaints have been registered with the Bay Area Air Quality Management District regarding this use. The high winds create an ideal situation for the propagation of noxious discharge through the downwind area. Trucks, open doors, and exhaust make it virtually impossible to contain such a use. These upwind uses are repeatedly cited but continue to pollute as it is virtually impossible to cost-effectively monitor and enforce ongoing compliance.

The existing Recology facility adjacent to the Project is one of the most noxious facilities in San Francisco. The high winds cause the odor to spread over many square miles almost every day in the Summer and Fall if not other times as well. This odor envelopes CPSRA (the land and water), adjacent highways and trails, the Candlestick Point stadium area slated for redevelopment, and even on some days as far as Sierra Point.

Commuters on Highway 101 who have the misfortune of having their windows down when passing by the Candlestick Park exit traveling South may notice an unfortunate coincidence: a sign that designates the Brisbane City limits and an overpowering nauseating odor of untreated garbage or the cloying revolting stench of perfume applied to the same. Users of the Bay Trail in this vicinity are also very familiar with this odor as well as the prolific litter that flies off of covered garbage trucks, snags in vegetation, and ultimately blows and washes over the Bay Trail (see Figure 33) and into the Bay.

The Internet forum iWindsurf.com provides a historical account of conditions at various windsurfing sites in the Bay Area from as early as 2008. Posts on this forum from as far back as Summer of 2009 discuss the garbage stench being produced at the current Recology facility. There is apparently no means or no will to hold violators of air quality standards to account in all cases.

Figure 33: Litter along the Bay Trail
Litter and discharge from industrial operations is carried by runoff, wind, or stormwater to the Bay. Uses that contribute such pollution should not be permitted to continue operating in violation.

While the existing Recology treatment facility is outside of the City of Brisbane, recent proposals submitted to the City indicate development on the order of an additional 750,000 square feet in Brisbane City limits. As far as we know, this would quadruple the size of the treatment plant and likely include other types of refuse such as biomass (compost). Biomass processing is notoriously the most noxious type of processing. Compost is literally "rotting garbage."

Figure 34: Recology Facility Receiving Compost Garbage for Processing
124 acre existing Recology facility in the Central Valley receives municipal compost waste from Berkeley, Livermore, San Francisco, and other parts of Alameda County [31].

In conversations with current and former City of Brisbane officials, we were told that this facility would be "ultra-clean" and the "first of its kind." We were told of assurances that there would be "no odor." We are unsure how this is possible. If garbage is transported, there must be at some point where it is exposed to the air to be offloaded through doors, from trucks, and loaded into treatment systems and vice versa (see Figure 32).

The very idea that 1,000,000 square feet of garbage and compost processing would produce no odor would be mostly quite bizarre if it was not so especially sad that this is actually being seriously considered in exchange for huge potential revenues.

Current Composting Facilities

In Berkeley, municipal compost was processed in the landfill area that is now Cesar Chavez Park. For comparison, this park is 90 acres, substantially larger than the total area available to Recology (including existing facilities). This compost for Berkeley is now handled in the Central Valley in a 124 acre tract of land surrounded by farms. Material is processed in an open-air manner handling roughly 23 tons per day [31].

In order to encourage decomposition, heat, oxygen, and water is required. 540' long rows up to six feet in height are exposed to sunlight and air and are turned and watered constantly.

Figure 35: Central Valley Recology Facility Processing Compost Material

When done incorrectly, the decomposition produces methane in addition to other byproducts of processing and sorting the raw waste that comes in to the facility. Even in a transfer station, it is clear that substantial odor and pollution can result as witnessed by the current Recology facility on the Baylands.

At this industrial scale in the Central Valley location, composting is economical and is efficient since the end product is largely used by the immediately surrounding farms. The idea that transport costs are saved by waste being processed close to where it is generated does not include all the facts. Portions of the waste still needs to be transported to landfills and the finished product still needs to be transported to end users.

Figure 36: Central Valley Recology Facility Processing Compost Material

While there is the presumption that this expanded facility would handle municipal compost biomass, many of these lessons and issues would apply equally to the current facility and expansion to other types of waste processing.

Figure 37: Central Valley Recology Facility Processing Compost Material

How to Enforce No-Odor Obligations

Setting aside the frustration of dealing with apparent short-sidedness, the practicality of ensuring such claims is daunting. We are sure that Brisbane would not simply take Recology at its word. We are sure that Brisbane would be very careful not to quadruple the size of an already incredibly and demonstrably noxious use presently at their doorstep.

Many other jurisdictions dealing specifically with Recology have received similar assurances only to find "nightmare" situations (cf. [32], [23]). The loophole that Recology and similar users seems to exploit is that there are no practical ways to monitor odor and there are no good laws that establish thresholds for odor violations. For example, Brisbane does not physically have the jurisdiction to install odor monitoring facilities and sensors downwind in the vicinity of the facility.

Furthermore, what possible monitoring technology could even be used and what are even acceptable odor limits? Odor is something that is carried by the wind and concentrations can be vastly different just a few meters away.

Notwithstanding the difficulty in even assessing compliance, what kind of penalties would be fair to offset possible odor? Why should the public suffer any odor at all, especially considering that the public most likely impacted will be to the East and South, outside of Brisbane, and not be receiving any stream of revenue?

Though we could not find specific records of requirements and assurances regarding odor during permitting, we were told by residents of the area that when the present Recology facility was first constructed, there were similar promises made that there would be no odor. One cannot imagine that the facility received a permit for operation that specific indicated it was permissible to create the level of pollution that it presently does. We were told there was in fact little or no odor during initial periods of operation. However over time, for whatever reasons, the condition has obviously worsened to the present state.

There is also the issue that the present facility that currently produces incredible odor pollution is outside of the City of Brisbane jurisdiction, being located in the City of San Francisco. Brisbane has therefore no direct authority over those portions of the combined facilities. How can Brisbane require that Recology or its affiliates expend potentially huge sums to tear down or retrofit that facility to create a new supposedly "clean" comprehensive facility? What about the business interruption that would accompany such a modification?

On the other hand, is Brisbane willing to overlook the current noxious polluter at its border while it approves as massive new expansion for the same? What assurance could Brisbane receive that Recology won't simply transfer its "cleaner" processing to the Brisbane facilities while simultaneously taking on the dirtier processing in the adjacent facilities within the City of San Francisco?

We have registered our concern with this garbage treatment proposal on other occasions. In addition to the aforementioned assurances and despite no realistic plan or specificity for guaranteeing the same, we were given the final consolation that "garbage has to be processed somewhere." In the face of such apparently dedicated apologists for what would no doubt amount to a substantial future stream of revenue for Brisbane, we expect to have no productive discussion. Hence, we appeal for rational and objective consideration to the public, stakeholders, and those other officials who might read these Comments.

6 Conclusion

To summarize, the DEIR Analysis incorrectly conflates the quantities of wind speed and turbulence intensity with that of Sailable Days. It measures the Project's impact on wind speed and turbulence intensity but does not measure the impact on Sailable Days or any other equivalently instructive quantity. Assuming that the wind speed and turbulence are interchangeable with or necessarily proportional to Sailable Days is arbitrary, lacks any foundation, does not meet the standards required by CEQA, is misleading, and is certainly not good and faithful professional engineering.

The Analysis does not specify a threshold for significant impact in terms of the Resource itself yet claims that there is no significant impact on the Resource. The Analysis conducted makes an overwhelming number of simplifying assumptions without justification or detail of alternatives or the consequence of these assumptions yet it reports extremely precise results with absolute confidence (i.e. no contingency for error in the assumptions made).

At the very start of the Analysis, the impact area examined does not match the area in which actual activity is predominantly conducted at the Resource and covers an arbitrary portion of the entire CPSRA. Furthermore, even within the possible area to examine, the Analysis only reports a handful of new potential impact measurement points that does not include areas closest to the Project and potentially most significantly impacted. The thoroughness of examining the potential impact area does not match with levels established in other smaller projects, even though this Project much larger scope and substantially less detail and certainty than those other projects.

These Comments demonstrate that especially within the Practical Sailing Area of critical importance, the true potential impact under a reasonable measure such as Sailable Days is between 9% and 44% given wind speed reductions of 5% to 10% and wind turbulence intensity increases of 5% to 10%. These level of wind speed reductions and wind turbulence intensity increases are found within a substantial portion of the Practical Sailing Area under a variety of wind conditions even considering that the Analysis does not analyze the most likely substantially impacted portions of the Practical Sailing Area or under certain wind conditions.

Taken individually or collectively, the risk of a substantial impact to the Resource is demonstrably great and substantially more significant than proposed by the DEIR Analysis. This sailing location is of paramount importance as it is one of the most consistent, most accessible, and highest quality of all of the San Francisco Bay Area, which places it among the very highest in the entire continental United States.

Careful mitigations should be included to ensure that potentially grave damage to this Resource is avoided. Multiple mitigation recommendations are proposed in these Comments. The most critical is to establish a minimum Waterfront Preservation District within the Critical Upwind Section between the Alemany Gap and the Practical Sailing Area and keep it as free from development and other interfering activities as possible.

Other considerations such as architectural streamlining, orienting, and stepped massing are also essential for both wind flow as well as to ensure public view preservation as much as possible.

The establishment of the recommended minimum Waterfront Preservation District will be the key to ensuring that all residents, visitors, and businesses of Brisbane benefit from this project in addition to increasing values for private project sponsors and maintaining recreational opportunities in the water at CPSRA.

Continued reassessment of wind and sailability impact should be conducted at subsequent stages of the Project's development once additional detail and options have be more firmly determined or stages of the Project developed. Not only is it critical to test what could actually be built, but it is critical to validate that some of the many assumptions made in the current Analysis prove to stand up to time and more thoughtful analysis methods.

Importantly, monitoring, testing, and enforcement programs with penalties should be established and funded

through the operations scheduled to be included in the Project. Air and water quality in such a sensitive high-wind area immediately adjacent to the Bay creates a special need that should be dealt at a higher level of scrutiny than that available from existing environmental authorities.
The Project should go above and beyond of what is required to preserve and foster natural resources and activities dependent on the same. The Project and community should embrace the extremely unique and highly sensitive windsports that take place just off of its shores. Benefits for both are not mutually exclusive with thorough consideration and a small amount of forethought. The penalty for failing to do so could be catastrophic for many.

The resources available in these Comments to measure the impact of the Project and propose mitigation are limited. It is the intent of these Comments to demonstrate the extreme need to carefully reevaluate the Analysis done in the DEIR and include substantial mitigation to prevent a disastrous taking of this valuable, unique, and highly sensitive environmental Resource.

It is not the intent to argue the fine points of the Analysis or to claim that the entire Analysis is incorrect. It is the spirit of these Comments that we hope is received and acted upon, that the Analysis should not be accepted without substantial modification and adoption of mitigation measures.

Accepting the DEIR Analysis as-is would not only result in serious unmitigated consequence to the Resource, it would help to establish an irresponsible precedent for accepting incomplete and unsubstantiated presumption in place of good and faithful professional engineering.