Alameda City Council City Hall 2263 Santa Clara Avenue Alameda, CA 94501

Via email: clerk@alamedaca.gov Vice Mayor John Knox White, email: jknoxwhite@alamedaca.gov

Dear Vice Mayor White

I am writing to express my concerns about the potential plan to construct a large data center in Alameda that proposes to use water from San Francisco Bay in a once-through cooling system.

I consider the water surrounding Alameda a very special place where marine mammals, fish, sea and shorebirds come to rest, eat, survive and live.

I am on the water stand up paddling or rowing out of Encinal Beach or the Oakland Estuary 3 – 4 times a week. I regularly paddle by the seal haul out which is currently full with young curious harbor seals. I consistently see and paddle by 1 to 5 bottlenose dolphins that rest just beyond the wall that Nautilus Data Technologies (Nautilus) is proposing to build the pipe out to. The whale has been spotted just this last Thursday during our evening practice at the nearest marker to shore from Encinal Beach just at the opening in the wall.

There are a few times a year when the area near the wall and proposed pipe explodes with feeding frenzies and Pelicans, Seagulls, Terns, Cormorants and Harbor Seals feed on the rivers of fish making their way from San Francisco up past our wall on their way up the bay. Our wildlife is healthy, vibrant and very alive, living so close to us yet many Alameda residents may not recognize how very truly special this area is.

The Navy has destroyed the ground in the area of the Sea Plane Lagoon and we have had to live in the debris of its costly clean up. I do not understand introducing the Nautilus water cooling technology that mirrors the careless use of our natural resources for its profit. Introducing an untested technology with a let's build it and see what happens lease could potentially damage this precious ecosystem that is in Alameda's care.

The sick whale coming to our shore is a harbinger that we need to be deeply aware and concerned about how we treat our water – that water, our shoreline, and the sediment that we have polluted is their home. We cannot risk their home with an experimental lease that would further damage the ecosystem.

There are energy startups that are working to modernize the building industry, energy and the HVAC arena with the goal of making positive impacts on the built and natural environments. We have a golden opportunity at the point. I hope we as a community can strive to make a real difference and attract environmentally smart change makers that will better our environment and not take from it.

Sincerely - Mary Spicer - Resident of Alameda & The Water That Surrounds It.

From:	Igor Tregub <itregub@gmail.com></itregub@gmail.com>
Sent:	Tuesday, June 18, 2019 9:42 AM
То:	John Knox White; Marilyn Ezzy Ashcraft; Jim Oddie; Malia Vella; Tony Daysog
Cc:	City Clerk
Subject:	Sierra Club Comments - Nautilus Proposal
Attachments:	Alameda - Nautilus - Sierra Club Letter - 2019 - 06 - 18.pdf

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Dear Mayor and Members of the City Council,

This constitutes a follow-on communication to our May letter on the subject. Please let us know should you have any questions.

Respectfully, Igor Tregub Sierra Club SF Bay Chapter and Northern Alameda County Group --

Sent from Gmail Mobile



June 18, 2019

Mayor Ezzy Ashcraft and Members of the Alameda City Council RE: Agenda Item 6-F: Proposed Nautilus Data Center – Alameda Point

Dear City of Alameda Mayor and Council Members,

In our letter for the May 7, 2019 City Council meeting we expressed opposition to the proposed Nautilus Data Technologies data storage facility at Alameda Point based on the potential for harmful algae blooms caused by the warm water discharged from the data center cooling system. **We continue to hold that position.** Simply stated, harmful algae blooms occur under conditions of increased nutrients, whether from runoff or upwelling of existing nutrients, rising temperature and slow moving water. The proposed discharge area has slow moving water.

There is no significant environmental benefit to locating this water-cooled data center at Alameda Point, but there is a distinct possibility that it will have unwanted environmental consequences from operation of the currently proposed cooling system. The staff claim that Nautilus's technology "could have a positive environmental impact through the significant reduction in energy used to power the data server" is baseless. By 2020, all of the Alameda Municipal Power (AMP) electrical supply will be carbon free. In fact, as stated elsewhere in the staff report, AMP is supportive of the project because of the large increase in its energy sales. The driving factor for the data storage industry in shifting to water cooling of data centers is operational cost savings to stay competitive. The co-benefit of greenhouse gas reductions would be operative in other energy service areas, but not in Alameda.

**Untested System** - The staff report acknowledges that the Nautilus water-cooling system is untested. Yet, the staff is recommending approval of what, in essence, will be a multi-million-dollar science experiment on a Public Trust Land waterway. Prudence should dictate that Nautilus first be required to conduct tests under simulated conditions, much like other new technology startups at Alameda Point, such as Natel Energy and Makani Energy, have been doing for years.

Important facts about the Nautilus cooling system are absent from the staff report. What is the size of the water pipe, volume of water being pumped, temperature of the water as it leaves the facility, and decibel noise level of the pump motor? We only know second-hand that Nautilus will be pumping 10,000 gallons per minute at the start up through a five-foot-diameter pipe, eventually increasing the water flow as cooling needs for more servers increases. We don't know how loud the pump will be and whether or not nearby residents will be subjected to a round-the-clock motor hum.

Per City Council direction, the staff has proposed an independent city-run testing and reporting program to reassure the council that this test site does not go sour. But the new language only stipulates that the city will have the right to engage a consultant/biologist, not that it will. It is of little comfort and a bit naïve to expect that a single biologist will be able to declare a "significant adverse impact" and cause the entire multi-million-dollar server facility to be shut down. The factors leading to negative impacts to the marine ecosystem can be multi-faceted, cumulative and erratic. Establishing a cause-and-effect relationship between the Nautilus project and negative impacts could be the subject of years of litigation. What we know today without any litigation, verified by multiple agencies such as the US Environmental Protection Agency and National Oceanic and Atmospheric Administration, is that warming water is a key contributing factor for toxic algae blooms. Being risk-averse would mean not adding more warm water.

The staff report enthuses its presentation by pointing to Nautilus's approved bargemounted data facility in Stockton. But that pilot project will be on a flowing river, and the Port of Stockton has given them only a five-year lease. The Stockton facility will have a capacity of 6 Megawatts of electricity, one-fifth the size of the Alameda Point facility at full capacity.

**Sensitive Marine Area** - <u>We are strongly opposed to routing the discharge pipe</u> <u>through the south harbor and through the jetty</u>. Some parts of nature should be left alone, and this is one of them.

The only disturbance to this harbor in the past century has been the construction of the jetty in 1945, which created the harbor, and limited dredging at the ferry maintenance facility site in 2016. As such, this marine environment is very mature and alive with wildlife and sea vegetation, including eelgrass, that should qualify the harbor for designation as a marine reserve. When viewed as a complete ecosystem, the proposed five-foot-diameter water discharge pipe on the Bay floor would introduce a permanent barrier, in effect a wall, bisecting the harbor and to some extent interrupting the natural flow of currents and nutrients, as well as movement of marine wildlife and organisms.

Additionally, discharging the cooling system water into the relatively calm waters of the Bay, as currently proposed, poses risks to the ecosystem that should be avoided. First, the discharged water, by definition, will be warmer than at intake. That is the whole point of the cooling system. No proof has been offered as to how much warmer it will be. No scientific evidence has been presented by Nautilus showing the heat dissipation rate of their system at the projected 25–30 Megawatts of electricity usage. This permanent warm water zone in the Bay could potentially become the site of a harmful algae bloom. Warming water, along with growing availability of nutrients, are the key conditions for

algae blooms. The city should be risk averse and not authorize the introduction of heated water into a very slow moving body of water when it is a known risk factor.

Secondly, the volume at which the water will be pumped will create a turbulent and potentially an inhospitable marine environment. The initial projected flow rate, based on 10 megawatts of electricity usage at startup, is 10,000 gallons per minute. The company anticipates ramping up to 30 Megawatts of electricity usage at full capacity, with an accompanying increase in water flow.

**Water Intake/Output Impacts** – The projected volumes of water being drawn into the pipe under the pier at the wharf will create its own underwater current. While regulations mandate a fish screen at the intake, this neglects to address the wider impact of the water current on the marine ecosystem. Small fish, microorganisms, nutrients, and seasonally herring eggs could be affected by the new turbulent conditions. We are concerned about the wider impacts of the intake system.

The type of water cooling system proposed by Nautilus, called once-through, is frowned upon by state regulators. We share the concerns and recommendations spelled out in Baykeeper's June 10 letter to you. The antiquated cooling system could harm the Bay ecosystem and, as they wrote, "Alameda should require Nautilus to develop a more creative solution to these problems instead of relying on decades-old technology to dispose of their waste heat in the Bay."

Alternative Discharge Route - <u>Should you still decide to proceed with a lease</u> <u>that authorizes a once-through cooling system, we urge you to require evaluation of an</u> <u>alternative route other than the south waterway for the discharge pipe, and to exclude</u> <u>the south waterway from any project</u>. We are not advocating for a specific alternative route for the water discharge pipe, only that the environmental review, permitting process and lease of city property exclude the south waterway from consideration.

In sum, the Sierra Club urges you to take the precautionary approach to minimize impacts to the environment. Demand more science, better technology and accept fewer promises. The areas around Alameda Point that will be impacted by this project are Public Trust Land. We urge you, as stewards of the public trust land, to place the environment on equal footing with economic development and not sacrifice the former for the latter.

Sincerely,

Sydie &

Sophie Hahn, Chair Sierra Club Northern Alameda County Group

Patricia Lamborn <patricia.lamborn@aol.com></patricia.lamborn@aol.com>
Monday, June 17, 2019 2:17 PM
Marilyn Ezzy Ashcraft; John Knox White; Jim Oddie; Tony Daysog; Malia Vella
ARA WEISIGER
Nautilus Data Center Lease Vote

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### RE: Nautilus Data Center Lease Alameda City Council Meeting, June 18, 2019

# TO: Mayor Ashcraft, Vice Mayor Knox White, Council Members Vella, Daysog and Oddie From: Pat Lamborn

**Intro**: My name is Pat Lamborn, I'm a supporter- member of San Francisco Baykeeper and a concerned resident of Alameda. I'm very grateful for the June 10<sup>th</sup>, 2019 letter Baykeeper sent to the Council which reflects their concerns regarding the Nautilus Data Center's proposal to use water from the San Francisco Bay in a once-through cooling system. Baykeeper has monitored pollution and other threats to the Bay for the last 30 years. I'd like to highlight some of the concerns from that letter which lead to my asks of you:

### **BAYKEEPER CONCERNS:**

#### Once-through cooling is outdated technology

Since 2010 California has mandated phasing -out this technology for power plants due to negative environmental consequences.

Nautilus could and should use a different cooling system that could maximize energy efficiency to reduce greenhouse gas footprint, consistent with Alameda's Climate Change Crisis declaration:

o Waste heat is wasted energy: the technology exists to capture and use waste heat from data centers rather than dumping it in the Bay.

### Once - through cooling presents potential environmental harm to S.F. Bay marine life

**including:** harbor seals, eel grass, Pacific Herring; sturgeon; Chinook Salmon; starry flounder, halibut, longfin smelt, Bay shrimp, Dungeness crab) through:

- Intake entrainment even with fish screens this could be a problem
- Temperature impacts can cause
  - o Growth of invasive or unwanted organisms (toxic algae blooms).

o Mortality to sensitive phases (eggs or larvae) of desirable aquatic species. Any temperature increase can have big impacts as most fish and invertebrates are sensitive to very small changes in temperature.

• **Outfall impacts** – flow rates at outfall could damage sensitive habitats and/or spread existing pollution.

• **Nautilus construction** of permanent water pipe infrastructure could impact eel grass beds, harbor seals, the shoreline and bed of the Bay, and benthic organisms. Benthos is the community of organisms that live on, in, or near the seabed, river, lake, or stream bottom, also known as the benthic zone. ...

Many organisms adapted to deep-water pressure cannot survive in the upperparts of the water column.

### My Asks:

- Do not sign a lease with Nautilus on June 18th,2019 as it includes exclusive reliance on a once through cooling system utilizing thousands of gallons of San Francisco Bay water.
- If you want to continue considering a lease with Nautilus it must be with a different cooling proposal that includes usage of and contribution to renewable energy.
- If you as an elected body want to consider this business usage at the Alameda Point, convene a study session with local environmental experts- and listen to them.

Signing a lease puts your political stamp of approval on the Nautilus plan to use Bay water at a point in time when there are serious challenges for true regulatory ability to predict or prevent negative results.

BCDC was recently audited by the State of California. To quote from the S.F. Chronicle article of May 27,2019: "A state audit of the regulatory agency known as the BCDC describes slow and inefficient enforcement, a huge backlog of cases and an inability to perform key duties. It blames those problems on leadership failures, staffing shortages and inadequate funding."

BCDC isn't our safety net at the present time. Neither is the EPA..

The Bay Area is rich in expert environmental scientists, lawyers, and experts to give you direct feedback on potential impacts and alternatives. **Please listen to <u>them.</u>** 

Sincerely,

Pat Lamborn Alameda Resident

From:	Jim Connaughton <jim@nautilusdt.com></jim@nautilusdt.com>
Sent:	Monday, June 17, 2019 12:15 PM
То:	Marilyn Ezzy Ashcraft; John Knox White; Malia Vella; Tony Daysog; Jim Oddie
Cc:	Nanette Mocanu; Ted Anderson/USA; City Clerk
Subject:	Nautilus Data Technologies: Independent Environmental Expert Response to
	Environmental Group Comments
Attachments:	AQ_Nautilus_Alameda_Memo_061719.pdf

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Dear Mayor Ashcraft, Vice Mayor Knox White, and City Council Members Vella, Daysog and Oddie,

We look forward to tomorrow evening's City Council meeting and appreciate the work of City staff in finalizing additional lease terms per the Council's direction at the last meeting, all of which Nautilus has accepted.

We have received the recent letters from several environmental groups outlining potential concerns about the project. Please find attached a response to these letters prepared by experts from the environmental modeling and permitting firm Anchor QEA.

We had the opportunity to meet last week with local members of the Sierra Club and to speak by phone with one of the leads for Baykeepers. After describing in detail the significant environmental advantages of our technology and discussing the various concerns raised in their letters, we let them know that:

1. The only matter currently before the City Council is approval of a lease for Building 530.

2. The lease includes a condition that we obtain all environmental approvals and permits, or the lease is terminated. No approvals, no project.

3. The City will lead the CEQA environmental review process, and the federal, state and local regulators will handle permitting under their respective authorities.

4. Nautilus will be engaging engineering and environmental experts to develop, model and evaluate alternatives for location of our intake and discharge system, all of which will be publicly available for review and comment, and independently considered by the City and permitting authorities for potential adverse impacts.

5. Our environmental protection and conservation objectives are aligned. Nautilus looks forward to working with them to address their questions during these processes in a fully informed way.

We felt the conversations were very constructive, and in particular helped to correct a misimpression by some that we and the City were at the end, rather than just at the beginning, of the environmental review and permitting process. We are planning followup meetings with them after tomorrow's City council meeting, and with any other parties interested in speaking with us.

Thank you for you kind consideration,

Jim

James L. Connaughton President and CEO Nautilus Data Technologies 5700 Stoneridge Mall Road Suite 340 Pleasanton, CA 94588 jim@nautilusdt.com 925-201-1385 (office) 202-255-8719 (mobile)



# Memorandum

June 17, 2019

To: Jim Connaughton and Byron Taylor, Nautilus Data Technologies, Inc.

From: Katie Chamberlin, Michael L. MacWilliams, PhD, PE, and Aaron Bever, PhD, Anchor QEA, LLC

## Re: Comments Received on the Proposed Nautilus Project at Alameda Point

Anchor QEA, LLC, has prepared this memorandum upon request from Nautilus Data Technologies, Inc., in response to the comments received by the City of Alameda on the proposed Nautilus facility at Alameda Point (the project). To date, comments have been received from the Sierra Club, San Francisco Baykeeper, and Golden Gate Audubon Society (the commenters).

In order to construct and operate a water-cooled data center at Alameda Point, Nautilus will need to obtain environmental approvals and permits, including the following:

- California Environmental Quality Act (CEQA) compliance. The City of Alameda will lead the CEQA process for the project. The CEQA document will identify the project description; assess potential direct, indirect, and cumulative environmental impacts resulting from the project; and identify feasible mitigation measures to reduce any potentially significant environmental impacts. The CEQA document will be circulated for public review.
- U.S. Army Corps of Engineers Rivers and Harbors Act Section 10/Clean Water Act Section 404 Permit
- Federal Endangered Species Act, Magnuson-Stevens Fishery Conservation and Management Act, and Marine Mammal Protection Act consultations with the National Marine Fisheries Service and U.S. Fish and Wildlife Service
- San Francisco Bay Regional Water Quality Control Board Water Quality Certification, Industrial National Pollutant Discharge Elimination System (NPDES) Permit, and NPDES Construction Stormwater Permit
- San Francisco Bay Conservation and Development Commission Permit
- California State Lands Commission Lease/Approval
- California Endangered Species Act consultation with the California Department of Fish and Wildlife

These processes mean that all of the questions raised by the commenters will be addressed in Nautilus's submittals to the City of Alameda and to the regional, state, and federal regulatory agencies noted above. The CEQA document and permit applications will need to include evaluations of the project's potential impacts on water quality, hydrology, and biological resources, among numerous other environmental resource topics. Feasible mitigation measures that could reduce the severity of any potentially significant environmental impacts must also be evaluated as part of the CEQA review process.

We have worked with Nautilus to follow exactly this process for its water-cooled data center at the Port of Stockton, which has completed CEQA review and obtained all local, regional, state and federal permits. That project is now under construction.

The City of Alameda has not yet initiated its CEQA review of project construction and operation. It is expected that this process will commence soon. Once this review is underway, the specific environmental impacts of and mitigation required for the project will be determined. That said, the overall approach to the environmental review and regulatory compliance process for this project is understood (as listed above) and must be followed in order for this project to move forward.

Although most of the topics raised by the commenters will be addressed in detail in the CEQA and permitting processes to come, this memo provides some additional information related to one of the questions raised by commenters—the concern that warm water discharge from a data center at Alameda Point will increase the chance of a harmful algal bloom. Harmful algal blooms most often occur in warm, clear, and nutrient-rich waters. The proposed water-cooled data center project at Alameda Point would discharge into the Central Bay, a portion of the Bay that stays relatively cool year-round due to the close proximity to the Golden Gate and exchange with the open ocean. The San Francisco Bay is also still relatively turbid and is historically considered a light-limited estuary, where growth of algae is hindered because of high turbidity in the water.<sup>1</sup> The U.S. Geological Survey researcher studying the first harmful algal bloom in the Bay stated that the bloom occurred in the South Bay "during a coincidence of unusually weak neap tides, calm winds, and four consecutive days of record high air temperature."<sup>2</sup> The unusual conditions in the South Bay that can facilitate a harmful algal bloom are even less likely to occur in the Central Bay.

Previous water temperature modeling showed that the operation of a water-cooled data center on the San Joaquin River would have only very small effects on water temperature with no expectation of contribution to harmful algal blooms. Based on our understanding of the Central Bay and the water temperature modeling previously conducted at other sites, we do not expect that the proposed data center discharge will increase the chance of a harmful algal bloom occurring near an outfall outside the jetty around Alameda Point. As alternatives for the location of the discharge around Alameda Point are considered as part of the CEQA review, alternatives in which the proposed discharge occurs near the seabed would further reduce the potential for the data center discharge to contribute to harmful algal bloom formation by minimizing any effects on the water column

<sup>&</sup>lt;sup>1</sup> Cloern, J.E., T.S. Schraga, and C.B. Lopez, 2005. "Heat wave brings an unprecedented red tide to San Francisco Bay." *EOS* 86(7):66. Available at: <u>https://doi.org/10.1029/2005EO070003</u>.

<sup>&</sup>lt;sup>2</sup> Cloern, J.E., T.S. Schraga, C.B. Lopez, N. Knowles, R.G. Labiosa, and R. Dugdale, 2005. "Climate anomalies generate an exceptional dinoflagellate bloom in San Francisco Bay." *Geophysical Research Letters* 32(L14608). Available at: <u>https://doi.org/10.1029/2005GL023321</u>.

stratification. Site-specific water temperature modeling will be conducted for alternative discharge locations around Alameda Point as part of the regulatory approval process for the project. This modeling will directly evaluate effects of the discharge from the data center at Alameda Point on water temperature and inform the technical and scientific evaluation and decision by each of the regulatory agencies whether to approve permits for the project.

From:	Frank Matarrese <f.j.matarrese@gmail.com></f.j.matarrese@gmail.com>
Sent:	Monday, June 17, 2019 12:41 PM
То:	LARA WEISIGER
Subject:	For the City Council Re: Item 6F of the Council Agenda

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Honorable Mayor and Council Members,

I am writing in opposition of approval of the lease agreement allowing the Nautilus Technologies data center project and request that this projected use be abandoned in favor of other options, as it did not seem to measure up to the mandate of replacing jobs lost when NAS Alameda closed. I still believe that we can do much better in attracting a business into the site in question with much greater job creation potential that what is promised by Nautilus in its server facility.

I am truly concerned about the long-term implications and significant complications of discharging the warm water with heat transferred from the server facility into San Francisco Bay, no less, so near to the newly established harbor seal haul out (Alameda Sun, May 30, 2019). I read the quote of Nautilus Data Technology's CEO Jim Connaughton: "We take naturally cold water and we simply borrow it" (May 23, 2019 ABC News) and my immediate reaction is that there is nothing simple about this. Drawing water from the Bay, transferring heat to it, then discharging the water at higher temperature back into the Bay is extremely complex and demands precise and costly controls, not to mention monitoring to assure the system actually works as expected.

By approving this lease, the Council takes on the responsibility of assuring that sucking large volumes of water out of the Bay does no harm and guaranteeing that the heated water being discharged into the Bay is in fact "less than a tenth of a degree Fahrenheit and when it blends with the bay it will be measurable" as the CEO asserts. I urge the Council to take another approach to ensure that the Bay environment is protected from warm water discharge by denying this use.

For future leases and transactions, especially, in Site B, I ask that the Council measures each project against the job replacement commitment of the Base Re-use Plan and do everything in its power to protect our fragile Bay environment.

Respectfully,

Frank Matarrese

From:	Patricia Gannon <pg3187@gmail.com></pg3187@gmail.com>
Sent:	Thursday, June 13, 2019 4:35 PM
То:	John Knox White; Jim Oddie; Marilyn Ezzy Ashcraft; Tony Daysog; Malia Vella
Subject:	Nautilus Data technology lease

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June 13, 2019

Honorable Marilyn Ezzy Ashcraft. Mayor of Alameda Honorable Members of the City Council

I am writing to respectfully request your Council not to approve leasing buildings at Alameda Point for the Nautilus Data Technology project. While this project would use water from the Bay to cool its data, releasing the reheated water back into the Bay, would have a serious negative impact on Alameda wildlife. San Francisco Baykeeper finds that once-through cooling is an antiquated technological approach and points out that use of this system could harm the bay in a variety of ways.

Three power plants along the margins of San Francisco Bay once used once-through technology but were subsequently shut down by the State Water Sources Control Board. Releasing heated water back into the Bay upset the sensitive balance to the Bay ecosystem. Our endangered Least Terns forage in the discharge area and a critical Brown Pelican Roost and our Harbor Seal float are nearby. Any rise in the water temperature could put one or all of the fish species at risk during stages of their development or cause them to swim in water levels unavailable to or birds.

The delicate marine ecosystem already under pressure. Our Alameda Point unique Nature Reserve and its wildlife are a unique and fragile resource in our intensely urbanized area. This project poses risks for each of these resources. Alameda cannot take the risk of the unknown consequences arising from this project.

Please do not allow this project to go forward. Thank you.

Patricia M. Gannon 1019 Tobago Lane Alameda, CA 94502 pg3187@gmail.com



June 11, 2019

The Honorable Mayor Ezzy Ashcraft and Honorable Members of Alameda City Council Alameda City Hall 2263 Santa Clara Ave. Alameda, CA 94501 *TRANSMITTED VIA EMAIL* 

#### RE: Nautilus Data Center Poses Too Many Risks to Alameda's Wildlife & Marine Ecosystem

Dear Mayor Ashcraft & Alameda City Council Members:

On June 18, the City Council is scheduled to consider a lease of buildings in Alameda Point for a water-cooled data center to be managed by Nautilus Data Technologies. We urge the Council <u>not</u> to approve the lease. The data center may reduce emissions by using bay water rather than electric power to cool their servers, but the potential negative environmental impacts of this data center to the bay and its wildlife are serious.

Nautilus's presentation to the Council stated that the increase in water temperature at the discharge site will be four degrees or fewer. In the Council materials on the City's web site, there is no analysis by Nautilus of whether that temperature increase or turbulence caused by discharge at the planned rates will negatively impact the fish and birds that use that area. The location of the proposed discharge point is environmentally sensitive. The endangered California Least Terns forage in that area. Furthermore, a crucially important night roost for Brown Pelicans is quite close by, as is the Harbor Seal resting platform. The central SF Bay fishery is critical for many birds and other animals. Many species are sensitive to temperatures just a few degrees higher than those they usually experience in nature. A rise in temperature of even 1 degree Celsius could have important and rapid effects on mortality of some organisms and on their geographic distributions. *Executive Summary, Coastal and Marine Ecosystems & Global Climate Change: Potential Effects on U.S. Resources. Pew Center on Global Climate Change, 2002 <u>https://www.c2es.org/document/coastal-and-marine-ecosystems-global-climate-change-potential-effects-on-u-s-resources/</u>. Further, warmer waters may cause species that remain to swim in the water column at levels that are not accessible for birds.* 

In addition, as the water temperature increases, the amount of oxygen that can dissolve in the water decreases. Dissolved oxygen is critical for the survival of animals and plants that live in the water. The amount of dissolved oxygen in an estuary's water is the major factor that determines the type and abundance of organisms that can live there. *National Oceanic and Atmospheric Administration, Ocean Service Education,* 

<u>https://oceanservice.noaa.gov/education/kits/estuaries/media/supp\_estuar10a\_temp.html</u> and <u>https://oceanservice.noaa.gov/education/kits/estuaries/media/supp\_estuar10d\_disolvedox.html</u> Warmer waters can also promote toxic algal blooms, a hazard to both humans and animals.

#### **GOLDEN GATE AUDUBON SOCIETY**

2530 San Pablo Avenue, Suite G, Berkeley, CA 94702 phone 510.843.2222 web www.goldengateaudubon.org

email ggas@goldengateaudubon.org

This project proposes changing water temperatures and creating turbulence in ways that have been shown to negatively impact fisheries and other wildlife. Alamedans have worked hard to protect and monitor our terns, pelicans, seals and other wildlife and we should not take the risk of the unknown consequences arising from this project.

In addition, we have not found any information in the materials on the City's web site that demonstrates <u>how</u> the temperature increase will be limited to four degrees. The estimated power draw from AMP is significant, and the servers can be expected to generate much heat. It is not apparent from the web site information how the temperature of the discharge water will be limited or monitored. The Council should carefully examine and thoroughly understand Nautilus's plan for limiting and monitoring the temperature increase prior to approving the lease.

The San Francisco Bay and its delicate marine ecosystem are under severe and harmful pressure. Our Alameda Point nature reserve and its wildlife are a unique resource in our intensely urbanized region. This data storage project poses risks for each of these resources and we urge the City Council <u>not</u> to approve the lease.

Sincerely yours,

Cindy Margulis Executive Director, Golden Gate Audubon

#### &

Leora Feeney & Linda Carloni Co-Chairs of the Friends of the Alameda Wildlife Reserve (FAWR)

From:	Ben Eichenberg <ben@baykeeper.org></ben@baykeeper.org>
Sent:	Monday, June 10, 2019 4:53 PM
То:	City Clerk; Jim Oddie; Tony Daysog; Marilyn Ezzy Ashcraft; Malia Vella; John Knox White;
	Richard Bangert; Jon Rosenfield
Subject:	Nautilus Data Technologies Once-Through Cooling
Attachments:	2019.06.10 Nautilus DC letter to Alameda CC.pdf

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Dear Mayor Ashcraft, Vice Mayor White, and Councilmembers Oddie, Daysog, and Vella,

Attached please find a letter from San Francisco Baykeeper regarding the proposed Nautilus Data Technologies data center utilizing once-through cooling. Baykeeper feels there are significant environmental questions regarding this proposal, especially the outdated and inefficient once-through cooling elements, as explained in the attached letter. Thank you for considering our comments and for your attention to this important issue.

If you have any questions, please don't hesitate to contact me.

Yours,

# M. Benjamin Eichenberg Staff Attorney

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Protecting San Francisco Bay from pollution since 1989 www.baykeeper.org @sfbaykeeper

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June 10, 2019

Alameda City Council City Hall 2263 Santa Clara Avenue Alameda, CA 94501

Via email: <u>clerk@alamedaca.gov</u> Councilmember Jim Oddie, email: <u>joddie@alamedaca.gov</u> Councilmember Tony Daysog, email: <u>tdaysog@alamedaca.gov</u> Mayor Marilyn Ezzy Ashcraft, email: <u>mezzyashcraft@alamedaca.gov</u> Councilmember Malia Vella, email: <u>mvella@alamedaca.gov</u> Vice Mayor John Knox White, email: <u>jknoxwhite@alamedaca.gov</u>

Dear Mayor Ashcraft, Vice Mayor White, and Councilmembers Oddie, Daysog, and Vella,

San Francisco Baykeeper is deeply concerned about the potential construction of a large data center in Alameda that proposes to use water from San Francisco Bay in a once-through cooling system. It has come to Baykeeper's attention that the Alameda City Council will be discussing this project at its June 18, 2019 meeting as the

Introduction of Ordinance Authorizing the City Manager to Execute a Fifteen-Year Lease with One Five-Year Option to Extend, Substantially in the Form of the Attached Lease, with Nautilus Data Technologies, Inc. for Building 530, an 82,251-Square Foot Building Located at 120 West Oriskany Avenue, Building 529, a 3,200-Square Foot Building, and Building 600, a 343-Square Foot Building, at Alameda Point. [Requires Four Affirmative Votes] (Base Reuse 819099).

Once-through cooling is an antiquated technological approach and the system proposed here could harm San Francisco Bay in a variety of ways. By its nature, this approach to system cooling dissipates heat energy into adjacent waters. This transfer of heat energy, along the route of the cooling system and in the system's outflow, can cause direct mortality to sensitive phases (e.g., eggs, or larvae) of desirable aquatic species, such as fish or their invertebrate prey. The dispersal of waste heat into waters surrounding the system may also facilitate the growth and distribution of undesirable organisms. System intake may entrain and kill sensitive species and currents formed by system outflow may disturb fragile habitats (e.g., egg incubation sites or cover for rearing fish).

These negative environmental impacts, in fact, have led California to phase out the use of this ecologically detrimental cooling process by 2024. According to a report from the California Energy Commission, water diversion from oceans, estuaries, lakes, or rivers to cool steam after it has passed through a turbine to create power was officially phased out in 2010 by the State Water Resources Control Board to address 19 power plants that diverted 16 billion gallons a day of California's waters.<sup>1</sup> The water

<sup>1</sup> See "Once-Through Cooling Phaseout," available at <u>https://www.energy.ca.gov/renewables/tracking\_progress/documents/once\_through\_cooling.pdf</u> (includes



diversion from these once-through cooling systems entrapped billions of aquatic organisms annually, including fish larvae and shellfish, and removed water from vital habitats.<sup>2</sup> If California is phasing out this potentially outdated technology in other sectors, Alameda should take a closer look at whether now is the appropriate time to permit expansion of such strategies.

Furthermore, construction of the proposed system will require the modification of existing Bay infrastructure. Such modification is likely to disturb and permanently alter the Bay floor as well as shoreline and shallow nearshore habitats.

Please take Baykeeper's detailed comments and concerns, below, into account when considering this project.

# Project Description for Nautilus Data Technologies' water-cooled data storage facility in Building 530, Building 529, and Building 600 at Alameda Point

The data storage facility is planned to go up to 25 megawatts of electricity usage, according to the estimate of electricity sales provided by Alameda Municipal Power. Therefore, at full build-out, the facility could take in approximately 25,000 gallons of water a minute. This water will flow through a five-foot-diameter pipe into the facility. The water will then be routed under several streets, under the Bay Trail, across the sea bed of the harbor, under the harbor seal float, through an opening in the breakwater, and then be discharged into the Bay.

# Technical Concerns Related to Once-Through Cooling, a Technology Proven to be Environmentally Detrimental to San Francisco Bay

A decade ago, three power plants along the margins of San Francisco Bay used once-through cooling. The State Water Resources Control Board banned the process and these operations shut down in part due to the finding that the process pulls large amounts of Bay water in to cool power plant turbines and then releases the heated water back into the environment, upsetting the sensitive temperature balance in the Bay ecosystem. Once-through cooling kills large numbers of fish and wildlife that get sucked into power plant turbines and trapped by the force of rushing water against intake screens. This type of cooling process is an outdated technology that was implemented 30 to 40 years ago when coastal power plants were built. The volume of water being considered in Alameda would draw a comparable volume of water to some of the plants considered under the once-through cooling policy and should receive the same level of scrutiny.

We are also concerned by the potential that construction of this cooling facility or its ongoing presence will negatively affect shoreline access (e.g., along the Bay Trail), as well habitat values associated with the shoreline, harbor seal float, the sea bed of the harbor, and the breakwater. Species that may be affected are harbor seals, fish such as Starry Flounder, California Halibut, Longfin Smelt, and many other fish species, as well as key invertebrates such as Dungeness Crab and/or Bay shrimp, among others. The City should assess the potential of construction or the continued existence of the cooling system infrastructure to harm protected species and/or those that are key components of regional fisheries or the food webs such fisheries rely upon.

recommendations by the California Independent System Operator, the California Public Utilities Commission, and the Energy Commission).

<sup>&</sup>lt;sup>2</sup> Id.

#### Potentially Broad Ramifications for the State and Region from Reliance on Outdated Technology

Nautilus has proposed a similar facility in the Port of Stockton, which would site a cooling plant in a waterbody that is severely challenged by high temperatures and low dissolved oxygen. Impacts from that facility might also be detrimental, and permitting of these systems may be on the rise. It is thus doubly important to require strong environmental protections for any once-through cooling proposal on the Bay, both to protect the Bay itself and to set a standard that such facilities should be held to in other parts of California.

In addition, the City should evaluate the availability of other cooling systems that are more protective of Alameda and the bay's environment and that are more energy efficient than once-through cooling systems. For example, waste heat recovery and conversion of waste heat to power are emerging trends for improving energy efficiency and reducing the greenhouse gas emissions footprint of data centers<sup>3</sup>. Requiring new data centers on the island to maximize their energy efficiency would be consistent with Alameda's commitment to reducing its greenhouse gas emissions.

#### Conclusion

Baykeeper is concerned that Nautilus has not sufficiently considered impacts from its data center once-through cooling proposal to San Francisco Bay associated with temperature, inflow, entrainment, outflow, acute and persistent effects of infrastructure siting on important fish and wildlife habitat, and greenhouse gas emissions associated with the inefficient use of waste heat produced by data centers. Generally speaking, once-through cooling is old technology now being replaced by more updated systems with fewer environmental impacts. The energy savings from once-through cooling as compared with other outdated technologies referenced by the project applicant are not sufficient reason to sacrifice public trust resources. More information concerning Nautilus' proposal is needed to properly evaluate the impacts to the Bay, including an evaluation of more modern alternatives such as a closed cycle wet cooling system,<sup>4</sup> or waste energy capture and reuse, or waste-heat-to-energy systems that would reduce potential impacts. The Bay Area's technology companies are world-renowned for their innovative solutions, Alameda should require Nautilus to develop a more creative solution to these problems instead of relying on decades-old technology to dispose of their waste heat in the Bay.

<sup>&</sup>lt;sup>3</sup> See, e.g., Nicola Jones, *Waste Heat: Innovators Turn to an Overlooked Renewable Resource*, Yale Environment 360 (May 29, 2018), available at <u>https://e360.yale.edu/features/waste-heat-innovators-turn-to-an-overlooked-renewable-resource</u>; Fred Pearce, *Energy Hogs: Can World's Huge Data Centers Be Made More Efficient?* Yale Environment 360 (April 3, 2018), available at <u>https://e360.yale.edu/features/energy-hogs-can-huge-data-centers-be-made-more-efficient</u>.

<sup>&</sup>lt;sup>4</sup> See, e.g., Union of Concerned Scientists, *How it Works: Water for Power Plant Cooling*, available at https://www.ucsusa.org/clean-energy/energy-and-water-use/water-energy-electricity-cooling-power-plant ("Wet-recirculating or closed-loop systems reuse cooling water in a second cycle rather than immediately discharging it back to the original water source. Most commonly, wet-recirculating systems use cooling towers to expose water to ambient air. Some of the water evaporates; the rest is then sent back to the condenser in the power plant. Because wet-recirculating systems only withdraw water to replace any water that is lost through evaporation in the cooling tower, these systems have much lower water withdrawals than once-through systems, but tend to have appreciably higher water consumption. In the western US, wet-recirculating systems are predominant").

Thank you for considering these comments. If you have any questions please don't hesitate to contact Ben Eichenberg, <u>ben@baykeeper.org</u>, (510) 735-9700.

Sincerely,

M. Benjamin Eichenberg

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on Rosenfield, F n Senior Scientist

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