*THE TIDINGS*

568 Bellevue Ave., Oakland, CA 94610-5026; (510) 238-2290; lmi@netwiz.net; www.lakemerrittinstitute.org
A community based, non-profit corporation, established 1995; IRS Code 501(c)(3); EIN 94-3214160

**VOLUME XXIII**  December 2018  **ISSUE XII**

“The Tidings” is an editorial newsletter. Posted opinions are not necessarily those of the City of Oakland.

**Happy Winter Solstice!**

The shortest period of daylight within the 24 hour day, the winter solstice in the Northern Hemisphere, will be on December 21st 2018. The Lake Merritt Institute, staff and volunteers wish you a happy and safe holiday season. If your celebrations take you caroling on the water or strolling the footpath at Lake Merritt, we hope you will enjoy the two beautiful aeration fountains, the diverse wildlife of the nation’s first Wildlife Refuge (1870) and the stretches of tranquil shoreline rehabilitated by Measure DD. The Lake Merritt Institute and YOU have a lot to do with it!

The Lake Merritt Institute is supported by the City of Oakland, through a contract renewed every few years. We maintain the aeration fountains and trash barriers at storm drain outfalls. We remove eScooters and other large debris from the water—but that is not enough. LMI depends on donations and subscriptions from citizens like you to fund our CLEAN LAKE PROGRAM (since 1996). And even *that* would not be enough without the thousands of hours donated by volunteers under the direction of our staff -- retired folks, professionals, housewives, school children, civic organization members, and people just like you and your friends -- removing thousands of pounds of trash that accumulate in Lake Merritt.

*Fountains must be pulled out of the lake and scraped clean of fouling organisms every few weeks by LMI staff; photo by James Robinson.*

You can join the Lake Merritt Institute, make a donation, or volunteer to clean the lake at our website lakemerrittinstitute.org. **LOVE YOUR LAKE!**

---

**LMI in November:** 1500 lbs. of trash were removed from the lake in November totaling 22,240 pounds total so far in 2018.
3.22 inches rain recorded by LMI rain gauge
LMI Director James Robinson and LMI Staff hosted 146 volunteers, made 2 educational presentations.
The “Big Flush” refers to the onslaught of urban runoff that gushes out of storm drains into waterways during the first big rains of the season. The unsavory cocktail arrives untreated at Lake Merritt via 62 storm drain outfalls. The most shocking example this month, receiving regional media attention, was a pile of hypodermic needles that accumulated in outfall #56 near the cathedral. Environmental activist Richard James displayed 250 syringes he recovered at outfall #56 on a single day. (Links to San Jose Mercury News article and KTVU interview of LMI Director James Robinson below in References).

It is important to emphasize that LMI volunteers are instructed not to handle needles but to flag them for professional recovery. We provide direction, protective gear and equipment for the public to clean the lake safely. According to Barbara Schaaf, a longtime volunteer, “It is important for people to know (also) that needles are not floating around in the Lake - they are at the drain point for downtown trash. I live on the Lake and volunteer pretty much every week - raking, weeding, trash pickup, planting etc. and have NEVER seen a needle except where the photo showed (see photo at right). My concern is that if I were a parent of a young child I might think is was dangerous to come here - Fairyland, Rotary Nature project etc.”

Trash that is not removed from Lake Merritt ends up in San Francisco Bay. It is potentially a financial as well as an ecological disaster for Oakland. According to an agreement with the Regional Water Quality Board, Oakland must reduce its trash outflow to the Bay by 100% over 2009 levels by the year 2022. It will face stiff fines of up to $10,000/day if it does not make adequate yearly progress toward that goal.

Illegal dumping, sidewalk litter and homeless encampments all contribute to urban runoff. Recent closures of transitional homeless centers have coincided with the visible return of campers to the shores of Lake Merritt. How are the problems of homelessness and trash intertwined? It would be easy to make a quick judgement that might not be fair or accurate. LMI has collected an increasing number of heavy items from the lake this year, but not all are directly related to homeless (for example, eScooters and a piano). The yearly weight of trash removed has held steady since 2011, actually decreasing since 2005 (see Patterns in LM Trash below).

Richard James, a.k.a. “The Coastodian,” collects plastic trash from Northern CA beaches and maintains The Coastodian website. He creates sculptures from plastic bottles to remind people to reduce plastic use and dispose of plastic responsibly. He worries about the effects of plastic waste on both wildlife and people.

“At the rate we are destroying our oceans with our plastic and other trash, WE MUST stop polluting the sea. This problem will not go away simply by pushing (the homeless) into some other person’s view.”

(https://coastodian.org/)

Recently, Mr. James has focused on trash and medical waste near homeless encampments and is working to provide safe sharps containers at locations where syringes are used and exchanged. He urges regional responsibility to meet the needs of the homeless.

LMI is assisting the City Environmental Services Division in investigating the source of the needles in outfall #56, which are a public health concern, and in researching storm drain filters that would keep them out of the lake.

Can we be both “Coastodians” and Custodians of our unsheltered brothers and sisters?? We must be.
A less obvious effect of the Big Flush is plummeting levels of dissolved oxygen (DO) at the bottom of Lake Merritt. Bottom DO has dropped to 1 or 2 parts-per-million (ppm) in the last three weeks, a level that is lower than the E.P.A. standard of 5 ppm.

Why? Urban runoff contains chemicals which can remove dissolved oxygen from water (AMEC report 2015). And in an estuary like Lake Merritt where fresh water and salt water mix, the runoff forms a layer of fresh water above the saltier water in the lake preventing mixing of oxygen from the air down into the deeper water. It does not reach the benthic (bottom) communities that depend on it.

Allowing tidal flushing to occur by keeping the tide gates open at the 7th St. Flood Control Station could help mix and bring in oxygen-containing water from the Bay. The City Watershed Department has been working on protocols to keep the gates open as much as possible. However, the gates must be closed to protect property from flooding when a significant rainfall occurs or when very high tides occur in the Bay. During the Winter Solstice, very high tides called King Tides occur and the tide gates are kept shut (see High High Tides below).

While King Tides may not be seen at Lake Merritt because of tide gate closure, you can observe the dramatic high tides at Jack London Square and other places around the Bay and Pacific Coast on Dec 22nd-23rd. The California King Tides Project considers them a preview of shoreline flooding problems that will occur with sea level rise, a result of global warming.

GETTING THE CONNECTION:

“When we try to pick out anything by itself, we find it hitched to everything else in the Universe.” – John Muir 1911

Nature does not respect the boundaries defined by humans to organize our social life. Things cycle and travel from one place to another according to the laws of physics, chemistry, biology and geography.

- Chemicals and trash from city streets, homeless encampments, agriculture and industry accumulate and disperse with the WATER CYCLE (The Big Flush, above).
- Air pollution from hundreds of miles away can make our lives miserable and threaten our health according to weather patterns which we affect by pumping greenhouse gases into the atmosphere (Breathing Houses, below).

And not getting the connection....

- National Climate Assessment predicting 10% loss for U.S. economy due to climate change “not believed” by President Trump.
- Resolution welcoming the International Panel on Climate Change Report on 1.5 degree Celsius global warming FAILS, opposed by oil producers U.S., Saudi Arabia, Russia and Kuwait.

“I know that our bodies were made to thrive only in pure air, and the scenes in which pure air is found.” - John Muir 1938
Who Needs A Nature Center, Anyway?

With all the natural disasters, extreme weather events and environmental injustices of the year, it is clear that our planet and our nation need an informed government and informed citizens to respond to climate change. Awareness starts at home with environmental education.

The Rotary Nature Center remains closed and a reopening date has not yet been announced. Karis Griffin, Oakland Parks, Recreation & Youth Development Supervisor in charge of the upgrade, reports that re-flooring will begin when paint touch-up work is completed. The two outdoor bathrooms will be modified in a manner that can accommodate the RNC’s needs, as well as the needs of the many visitors that come to this part of the lake.

Information about progress on the Rotary Nature Center upgrade can be found on lakemerritt.org under RNC updates. If you would like to write a letter to the City in support of the Rotary Nature Center as an interpretive center for the Wildlife Refuge and all the people of Oakland go to https://sites.google.com/view/stem-at-lake-merritt/support-letters-for-the-rotary-nature-center for examples and email addresses.

Contact The Tidings Editor at ktnoon@aol.com if you would like information about the Rotary Nature Center Friends, a citizen’s group that advocates for an inclusive, transparent planning process under the direction and approval of OPR&YD for an interpretive center for Lake Merritt for all of the people of Oakland.

THANK YOU TO OUR NOVEMBER VOLUNTEERS! Volunteer groups in November included Rincon Consultants. Inc., Dreidel AZA, Camp Tawonga, St. Paul’s Episcopal School, Tanium, Our U-Clean-It self-organized teams, and the LMI A-TEAM regulars. We appreciate your efforts and community spirit. Great Job!
The Golden Gate Audubon walk started with a strange sight: the bare trees on the islands were crowded with Double-crested Cormorants. Birds were sitting in and around the nests, rearranging sticks, and even posing head-and-tail-high in the “come live with me and be my love” pose. Routine in March, but weird enough in November for a passing couple to stop the group and demand, “What’s up with the cormorants? They don’t belong here now!” No one had an answer – in more than a decade of year-round walks, we’d never seen anything like it either. These birds were mostly (but not quite all, which was even stranger) bronzy juveniles, normally uninterested in pairing off, and the trees should have been nearly empty from the time the last nest fledged in the summer till the land grab started in early spring. What could it be? What happens next? Tune in next month....

On the lake, the expected visitors were in residence: all three small grebes (Pied-billed, Eared, and Horned), the diving ducks (Greater and Lesser Scaup, Canvasbacks, Common and even Barrow’s Goldeneyes, Bufflehead, and Ruddy Ducks), plus both White and Brown Pelicans. Numbers continued to be way down, however – especially among the scaup: dozens instead of hundreds or thousands. We did see birds everywhere, but the surface should have been black with them and it just wasn’t.

Black-crowned Night-Herons, on the other hand, were sitting just about anywhere a heron could sit along the shores of the islands – all ages, from streaky youngsters through tan adolescents to elegant black-gray-white adults – many more than in recent months. It’d be nice if they were moving back to breed at the lake, but again, only time will tell. None along the left side of the island nearest the nature center, though, where two raccoons (an adult and a half-grown youngster) were fossicking among the rocks. No Green Herons, either, possibly avoiding the raccoons, which were patrolling one of their favorite places.

Among the trees in the park, we saw most of the seasonal and year-round regulars, with the absence of Western Bluebirds and House Finches more than compensated by lovely views of burglar-masked Townsend’s Warblers and droves of White- and Golden-crowned Sparrows. Oak Titmice and Chestnut-backed Chickadees were darting back and forth around the base of the redwood beside the monkey-puzzle tree in the garden, joined by a California Scrub Jay of an unusually luminous shade of blue.

The bird of the day arrived as we were passing the pair of catalpa trees bordering the path across from the garden center. As usual, we paused to note the horizontal rows of holes that crowd the branches, saying wistfully, “Sapsuckers love these trees, and if we’re going to see –” At which point, a woodpecker flew into the top of one of the trees, showing off the rusty-red head, neck, and chest and the black-and-white wings of a Red-breasted Sapsucker! And it stayed, giving us long looks from all sides. (Even though we always hope, we do not expect to see this bird: since 2009, it’s appeared only eight times during the walk, no more than once in a whole year.)

What with the two truly amazing sights, and 46 species observed all told (including the now apparently resident Wood Duck, which put in a brief appearance for some of the group), and the rain that threatened but did not fall before we were all long since home and dry, it was a jewel of a day at Lake Merritt, where every day....

***AUDUBON BIRDWALKS AT THE LAKE: Join bird expert Hilary Powers any fourth Wednesday of the month for a free “Birdwalk” at the lake. Muster at the geodesic bird cage near the Nature Center at 9:30 a.m. for what are always fascinating introductions to lake birdlife.***
You can’t inhale a house, yet that is what everyone in the Bay Area did for many days in November as the incinerated molecules of more than ten thousand homes from the Camp Fire drifted down to us, and into our lungs. Imagine for a minute if you can, what would be vaporized if your entire home was converted to smoke. Then imagine breathing it. That is what we did. For over a week, air quality levels in the Bay Area were often unhealthy, very unhealthy, and even hazardous, as they were in Santa Rosa, Sacramento and other California cities. Unless we stayed indoors or wore a mask, we had no choice. Particles twenty times smaller than the diameter of a human hair were what we had to breathe. Penetrating deep into our lungs, and perhaps even into our circulatory systems, these fire pollutants have been shown to have a close link to premature death from heart and lung disease. Fine particles are also known to trigger or worsen chronic disease such as asthma, heart attack, bronchitis and other respiratory problems. We have been literally breathing the remains of houses, and everything else that burned up there.

As all know, the source of this assault on our health was the Camp fire that killed dozens of people and eliminated the town of Paradise. As most of us know, such fires are dramatically increasing in frequency, duration, and intensity. As many know, this is the result of climate change. In a normal year, Paradise would have received 4-5 inches of rain before the fire started. But no rain at all fell for months, and soils, trees, brush, grasses were abnormally dry, and primed to burn. Those who study such things have been warning us for years that this was coming. But what has been the recent response to such climate warnings?

- Last month, despite similar fires in the state of Washington, major oil companies spent millions of dollars to defeat a price on carbon emissions that would have begun to slow the use of fossil fuels. Initiative 1631, which would have placed a meager fee of $15 per ton of carbon emissions, lost by about 8 percent. Big oil also won in Colorado where voters rejected a limit on the distance between fracking and houses, churches, schools etc. Despite proclamations that they are not opposed to a carbon tax, oil companies are spending whatever it takes to convince voters to allow them to keep polluting. Unless we rein them in, the fires will continue.
- In 2018, recalcitrant politicians blocked any meaningful progress to slow climate change, Trump threatened to withdraw America from the Paris agreement, and the House even passed a resolution denouncing the idea of a U.S. carbon tax as detrimental to the economy.
- Overall, most American citizens have rejected a “war time scale” effort that is essential if we are to have even a chance to stop the warming that is increasingly causing us to breathe hazardous air particles. Our parents rationed copper, food and rubber in an effort to win World War II. Yet today, despite increasing threats to our health, water supplies, sea level and borders, sales of SUV’s continue, outdoor heaters proliferate at restaurants, and climate change was barely mentioned in the mid-term elections.
In the graphic at right, note that the peaks in temperature largely coincide with peaks in large fires. We have now warmed about 1.4 degrees F, but existing trends show there will be several more degrees of warming, perhaps as high as six or more. How many fires will there be then?

**What can we do?** If there is any hope for not breathing houses in our future, here is what we ALL need to do.

- Join and support the Citizens’ Climate Lobby [https://citizensclimatelobby.org/](https://citizensclimatelobby.org/) a nonprofit, bipartisan, volunteer-based organization with 487 chapters world-wide that enhance focus, relationships, integrity, optimism and personal power. As evidenced by the passage of a Climate Fee and Dividend in Canada, this is our best chance for national and world-wide climate action.

- Support Youth vs. Gov [https://www.youthvsgov.org/](https://www.youthvsgov.org/) a national lawsuit that seeks to force our government to develop a national plan to restore Earth’s energy balance, and implement that national plan so as to stabilize the climate system. This legal action is based on the premise that we all have the same rights to life, liberty, and property — but these rights depend on a safe climate.

Climate change is very real, increasing, and threatens your health.

If we don’t do enough to slow it, our faces and those of our children, will increasingly look like this.

---

**Holiday Caroling On Lake Merritt!!** – From Saturday, December 1 until Sunday, December 23, the Lake Merritt Boating Center is offering on-the-water caroling tours launching from 568 Bellevue Avenue inside Lakeside Park. The admission fee is $8 per person or $120 for the whole boat. For more information, please visit [www.sailoakland.com](http://www.sailoakland.com) or contact Sarah Herbelin, Boating Supervisor, at sherbelin@oaklandca.gov.
Patterns in Lake Merritt’s trash
*Remember a correlation does not mean there is a cause-effect relationship.

1) The amount of trash in pounds **decreased** by about 70% from 2005 to 2015.
   - When the plastic bag ban went into effect in 2011, pounds of trash dropped by 1/3 in one year!
   - The drought of 2013-2015 had less flushing and less trash was delivered to the lake from storm drains.

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>January</td>
<td>2,420</td>
<td>1,060</td>
<td>1,360</td>
<td>1,600</td>
<td>1,660</td>
<td>3,260</td>
<td>6,740</td>
<td>3,000</td>
<td>6,900</td>
<td>4,260</td>
<td>7,200</td>
<td>6,740</td>
</tr>
<tr>
<td>February</td>
<td>2,460</td>
<td>2,600</td>
<td>2,960</td>
<td>2,180</td>
<td>1,740</td>
<td>2,560</td>
<td>3,400</td>
<td>4,840</td>
<td>3,160</td>
<td>5,820</td>
<td>4,840</td>
<td>5,860</td>
</tr>
<tr>
<td>March</td>
<td>3,760</td>
<td>1,660</td>
<td>2,400</td>
<td>2,060</td>
<td>3,080</td>
<td>3,120</td>
<td>4,060</td>
<td>3,060</td>
<td>1,380</td>
<td>4,780</td>
<td>7,360</td>
<td>5,600</td>
</tr>
<tr>
<td>April</td>
<td>2,200</td>
<td>1,880</td>
<td>1,780</td>
<td>2,260</td>
<td>4,020</td>
<td>1,920</td>
<td>3,900</td>
<td>2,080</td>
<td>940</td>
<td>3,000</td>
<td>4,940</td>
<td>5,520</td>
</tr>
<tr>
<td>May</td>
<td>1,580</td>
<td>1,480</td>
<td>2,240</td>
<td>2,620</td>
<td>1,600</td>
<td>2,020</td>
<td>2,240</td>
<td>1,360</td>
<td>2,420</td>
<td>1,820</td>
<td>3,420</td>
<td>3,100</td>
</tr>
<tr>
<td>June</td>
<td>1,380</td>
<td>560</td>
<td>1,020</td>
<td>1,420</td>
<td>860</td>
<td>2,080</td>
<td>1,620</td>
<td>1,360</td>
<td>900</td>
<td>3,280</td>
<td>2,620</td>
<td>2,740</td>
</tr>
<tr>
<td>July</td>
<td>1,200</td>
<td>920</td>
<td>260</td>
<td>1,100</td>
<td>1,100</td>
<td>1,200</td>
<td>965</td>
<td>440</td>
<td>1,400</td>
<td>1,380</td>
<td>560</td>
<td></td>
</tr>
<tr>
<td>August</td>
<td>-960</td>
<td>1,060</td>
<td>2,060</td>
<td>1,880</td>
<td>940</td>
<td>1,420</td>
<td>1,680</td>
<td>1,960</td>
<td>1,180</td>
<td>2,320</td>
<td>2,020</td>
<td></td>
</tr>
<tr>
<td>September</td>
<td>-1,040</td>
<td>2,200</td>
<td>1,220</td>
<td>1,980</td>
<td>600</td>
<td>1,380</td>
<td>2,100</td>
<td>600</td>
<td>2,460</td>
<td>1,320</td>
<td>540</td>
<td></td>
</tr>
<tr>
<td>October</td>
<td>-440</td>
<td>1,980</td>
<td>1,320</td>
<td>2,720</td>
<td>1,760</td>
<td>1,280</td>
<td>4,640</td>
<td>2,160</td>
<td>4,360</td>
<td>2,280</td>
<td>2,100</td>
<td></td>
</tr>
<tr>
<td>November</td>
<td>-1,650</td>
<td>1,760</td>
<td>2,180</td>
<td>3,280</td>
<td>740</td>
<td>2,560</td>
<td>3,260</td>
<td>4,140</td>
<td>1,680</td>
<td>3,060</td>
<td>6,160</td>
<td></td>
</tr>
<tr>
<td>December</td>
<td>-3,220</td>
<td>2,340</td>
<td>1,640</td>
<td>2,740</td>
<td>1,000</td>
<td>3,400</td>
<td>3,260</td>
<td>2,380</td>
<td>3,680</td>
<td>5,320</td>
<td>5,040</td>
<td></td>
</tr>
</tbody>
</table>

2) More trash is collected after heavy rains. **But more trash is also collected when there are more volunteers!** Thank you again to the LMI Volunteers of 2018!

![RAINFALL and TRASH COLLECTED 2018 so far](image)
Lake Merritt Institute’s Volunteer Safety Sheet:
Volunteers also sign a city waiver when they attend a regular work day. They are instructed to do so when they use the U-Clean-It boxes.

VOLUNTEER SAFETY SHEET

General Safety
➤ Wear appropriate footwear, clothing and a hat.
➤ Wear sunscreen and bring water.
➤ Always sweep, rake or shovel glass. Never pick it up with your hands.

Tool Safety
➤ Carry tools carefully to avoid hitting others.
➤ Always use the right tools for the right job. Ask a team leader or City staff if you are unsure.
➤ Never allow children to play with or use sharp tools.

Traffic Safety
➤ When possible, stay on the sidewalk. Never walk in the street.
➤ When working in or around a gutter, work from the sidewalk.
➤ Wear a bright, reflective work vest or bright colored clothing.
➤ Cross streets at signals or crosswalks.

Hazardous Waste
➤ NEVER TOUCH HAZARDOUS WASTE! Hazardous waste includes weapons, toxins (ie, auto fluids, chemicals, paints) or medical waste.
➤ Contact your team leader or City staff to report questionable items.
➤ If City staff is not available, contact the Fire Services Agency Hazardous Waste Dispatch at 444-3322 and report the exact location of the waste.
For dead or stray animals call Animal Services at 535-5602.

Hypodermic Needles
➤ NEVER TOUCH NEEDLES! Mark the spot where the needle is located and contact City staff for proper disposal.
➤ If City staff is not available, contact the Fire Services Agency Hazardous Waste Dispatch at 238-3331 and report the exact location of the needle.

Working Near Waterways
➤ Do not work in a creek during periods of high flows.
➤ Do not go into culverts/tunnels.
➤ Avoid working in areas where poison oak and blackberry thorns are found.
➤ Watch your footing on slopes and shorelines.
➤ Never allow children to work on steep slopes or near shorelines without adult supervision.

City of Oakland, Public Works Agency, Keep Oakland Beautiful 434-5113
**High High Tides** of more than 6 feet at the Golden Gate Bridge lead to closure of tide gates at the Lake Merritt Flood Control Station at 7th Street. This may explain the low dissolved oxygen readings observed in November (dates highlighted in yellow below).


<table>
<thead>
<tr>
<th>Date (Nov)</th>
<th>High Tide</th>
<th>Low Tide</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time (PT)</td>
<td>Height (ft.)</td>
<td>Time (PT)</td>
</tr>
<tr>
<td>20</td>
<td>9:04 am</td>
<td>5.88</td>
</tr>
<tr>
<td>21</td>
<td>9:36 am</td>
<td>6.13</td>
</tr>
<tr>
<td>22</td>
<td>10:09 am</td>
<td>6.35</td>
</tr>
<tr>
<td>23</td>
<td>10:45 am</td>
<td>6.5</td>
</tr>
<tr>
<td>24</td>
<td>12:33 am</td>
<td>4.96</td>
</tr>
<tr>
<td>25</td>
<td>1:26 am</td>
<td>4.99</td>
</tr>
<tr>
<td>26</td>
<td>2:20 am</td>
<td>4.98</td>
</tr>
<tr>
<td>27</td>
<td>3:17 am</td>
<td>4.99</td>
</tr>
<tr>
<td>28</td>
<td>4:16 am</td>
<td>5.06</td>
</tr>
<tr>
<td>29</td>
<td>5:14 am</td>
<td>5.22</td>
</tr>
<tr>
<td>30</td>
<td>6:08 am</td>
<td>5.47</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Date (Dec)</th>
<th>High Tide</th>
<th>Low Tide</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time (PT)</td>
<td>Height (ft.)</td>
<td>Time (PT)</td>
</tr>
<tr>
<td>1</td>
<td>6:57 am</td>
<td>5.75</td>
</tr>
<tr>
<td>2</td>
<td>7:42 am</td>
<td>6.04</td>
</tr>
<tr>
<td>3</td>
<td>8:23 am</td>
<td>6.27</td>
</tr>
<tr>
<td>4</td>
<td>9:01 am</td>
<td>6.42</td>
</tr>
<tr>
<td>5</td>
<td>9:37 am</td>
<td>6.47</td>
</tr>
<tr>
<td>6</td>
<td>10:12 am</td>
<td>6.43</td>
</tr>
<tr>
<td>7</td>
<td>12:00 am</td>
<td>4.9</td>
</tr>
<tr>
<td>8</td>
<td>12:46 am</td>
<td>4.9</td>
</tr>
<tr>
<td>9</td>
<td>1:31 am</td>
<td>4.87</td>
</tr>
<tr>
<td>10</td>
<td>2:14 am</td>
<td>4.81</td>
</tr>
<tr>
<td>11</td>
<td>2:57 am</td>
<td>4.76</td>
</tr>
<tr>
<td>12</td>
<td>3:40 am</td>
<td>4.73</td>
</tr>
<tr>
<td>13</td>
<td>4:24 am</td>
<td>4.75</td>
</tr>
<tr>
<td>14</td>
<td>5:07 am</td>
<td>4.85</td>
</tr>
<tr>
<td>15</td>
<td>5:49 am</td>
<td>5.02</td>
</tr>
<tr>
<td>16</td>
<td>6:28 am</td>
<td>5.25</td>
</tr>
<tr>
<td>17</td>
<td>7:06 am</td>
<td>5.54</td>
</tr>
<tr>
<td>18</td>
<td>7:42 am</td>
<td>5.85</td>
</tr>
<tr>
<td>19</td>
<td>8:19 am</td>
<td>6.16</td>
</tr>
<tr>
<td>20</td>
<td>8:57 am</td>
<td>6.46</td>
</tr>
<tr>
<td></td>
<td>9:37 am</td>
<td>6.71</td>
</tr>
<tr>
<td>---</td>
<td>---------</td>
<td>------</td>
</tr>
<tr>
<td>22</td>
<td>10:20 am</td>
<td>6.87</td>
</tr>
<tr>
<td>23</td>
<td>12:25 am</td>
<td>5.06</td>
</tr>
<tr>
<td>24</td>
<td>1:13 am</td>
<td>5.17</td>
</tr>
<tr>
<td>25</td>
<td>2:01 am</td>
<td>5.25</td>
</tr>
<tr>
<td>26</td>
<td>2:50 am</td>
<td>5.32</td>
</tr>
<tr>
<td>27</td>
<td>3:41 am</td>
<td>5.43</td>
</tr>
<tr>
<td>28</td>
<td>4:33 am</td>
<td>5.57</td>
</tr>
<tr>
<td>29</td>
<td>5:25 am</td>
<td>5.76</td>
</tr>
<tr>
<td>30</td>
<td>6:15 am</td>
<td>5.96</td>
</tr>
<tr>
<td>31</td>
<td>7:04 am</td>
<td>6.16</td>
</tr>
</tbody>
</table>

**REFERENCES**

**Winter Solstice:**
- Clean Lake Program [http://lakemerrittinstitute.org/](http://lakemerrittinstitute.org/)
- Aeration Fountains [http://lakemerrittinstitute.org/?s=aeration+fountains](http://lakemerrittinstitute.org/?s=aeration+fountains)  

**The Big Flush**

Needles:
- The Coastodian [https://coastodian.org/](https://coastodian.org/)
- Volunteer Safety Guide- Lake Merritt Institute – see below

**Trash Goals:**
- Regional Water Quality Agreement (RMP)
- See references in The Tidings 10 2017
- City of Oakland, Informational Report on Stormwater Trash Load Reduction 4/13/17
  Attachment B – Oakland Trash Generation Map (EOA, Inc. Jan. 30th 2014)

**Homeless at Lake Merritt**
- Lake Merritt.org - [https://www.lakemerritt.org/homelesslm.html](https://www.lakemerritt.org/homelesslm.html)
King Tides, Low Dissolved Oxygen

King Tides  https://www.coastal.ca.gov/kingtides/
California King Tides Project  https://www.coastal.ca.gov/kingtides/

Low DO

2014-2015 Lake Merritt Water Quality Monitoring Report made public by the City Public Works Department in July 2016. The study conducted by AMEC Foster Wheeler focused specifically on conditions affecting DO (dissolved oxygen) in the lake -- a critical factor, the lack of which landed Lake Merritt on the State Water Quality Board (303d list) in 2006 as an “impaired water body”.


Getting and not getting the connection:

John Muir Quotes:

https://vault.sierraclub.org/john_muir_exhibit/writings/favorite_quotations.aspx

“When we try to pick out anything by itself, we find it hitched to everything else in the Universe.”
- My First Summer in the Sierra, 1911, page 110.

“I know that our bodies were made to thrive only in pure air, and the scenes in which pure air is found.” - John of the Mountains: The Unpublished Journals of John Muir, (1938), page 191.

National climate Assessment:


https://nca2018.globalchange.gov/


United Nations does not welcome International Panel on Climate Change report:

https://earther.gizmodo.com/oil-allies-refuse-to-welcome-key-scientific-report-at-u-1830973423


Breathing Houses:

https://citizensclimatelobby.org/

https://www.youthgov.org/


Who Needs a Nature Center?


Weather/Climate Discussion by Daniel Swain

https://www.pointblue.org/ellies_blog/16589/