

# Sustainable Water Management (Alliance for Water Stewardship, AWS) Report

The AWS International Water Stewardship Standard (AWS Standard) is the only sustainable water management standard in the world. TSMC was a leader in introducing the standard at the beginning of 2019. Fab 6 and Fab 14 Phase 5/6/7 serve as demonstration factories in initial stage, and the standard will be promoted to F15A and F15B in 2020, and companywide in the future. The related programs and progress will be disclosed publicly and periodically.

## Five Main Outcomes for Implementation of the AWS Standard

- Good water governance
- Sustainable water balance
- Good water quality status
- Important water-related areas
- Safe water, sanitation and hygiene for all

## Internal Organizations for Sustainable Water Management

Responsible Personnel / Unit	Roles and Responsibilities
Corporate ESH Division and Director	<ul style="list-style-type: none"> <li>• Corporate management representative for environmental, safety and health (ESH), and is responsible for corporate level water related management review</li> <li>• Water-related regulatory identification and communication</li> <li>• Water-related internal audit</li> <li>• Stakeholder communication for water-related topics</li> </ul>
Fab Director	Fab management representative for environmental, safety and health (ESH), and is responsible for fab water related management review
Facility Department	<p>The functional unit for AWS water management, and is responsible water-related tasks in fabs, including:</p> <ul style="list-style-type: none"> <li>• Water risk identification and response</li> <li>• Operation and maintenance of water-related systems</li> <li>• Emergency response for malfunction of water-related systems</li> <li>• Water quality monitoring</li> <li>• Setting and implementing water-related goals and plans</li> </ul>
Fab Industrial Safety and Environmental Protection Department	<ul style="list-style-type: none"> <li>• Application and reporting for water-related permits</li> <li>• Water-related quality measurement</li> <li>• Water-related internal audit</li> </ul>

## Annual Water Management Goals and Performance

Performance Indicator	Unit	Goal	Base Year	Target Year	Y2019 Performance					
					Company-wide	Fab 6	Fab 14 Phase 5/6	Fab 14 Phase 7	Fab 15A	Fab 15B
Unit Product Water Use	Liter/8-inch wafer-e-mask layer	Reduce 30%	Y2010	Y2030	-5.2%	14.1% Note 1	-45% Note 2	-55.8% Note 3	-48.9% Note 4	24.8% Note 5
Newly accumulated water saving quantity	Million Metric Ton	12.77	Y2016	Y2025	3.28 Note 6	- (4.3)	- (12.0)	- (5.1)	0.0032 (16.3)	- (23.6)
Wastewater effluent ammonia average concentration	mg/liter	<30	-	Y2019	17.31	32.7 Note 7	23.5	12.18	20.25	6.0

Note 1 The Fab 6, Phase 2 facility was constructed in 2018 and its water recycling system remains under installation. Water efficiency will gradually improve with installation progress.

Note 2 Base year is 2015, first year of mass production for Fab 14 Phase 5/6

Note 3 Base year is 2016, first year of mass production for Fab 14 Phase 7

Note 4 Base year is 2016, first year of mass production for Fab 15A

Note 5 Base year is 2018, first year of mass production for Fab 15B

Note 6 Fab 6, Fab 14P5/6/7 and F15B did not install new water recycling systems in 2019. The number in parentheses shows the water saved quantity in 2019 using existing water recycling systems.

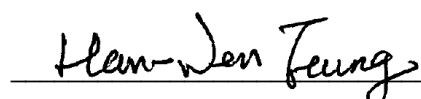
Note 7 The high concentration ammonia wastewater of Fab 6 was treated by Fab 14A. Overall ammonia wastewater of Fab 6 will be treated by the wastewater regeneration plant in the Southern Taiwan Science Park by 2021.

## AWS Demonstration Facility Common Water-related Challenges and Responses with Stakeholders

Risk	Impact	Responding Action
Flooding	Production is affected, causing financial losses and a decrease in revenue	<ul style="list-style-type: none"> <li>Raise the building base of newly- construction fabs</li> <li>Install water-proof gates</li> </ul>
Drought	Production is affected, causing financial losses and a decrease in revenue	<ul style="list-style-type: none"> <li>Promote green factory and green building certifications</li> <li>Promote fab water conservation and recycling</li> <li>Collaborate with stakeholders on water-saving measures</li> </ul>
Unstable Water Supply	Impact on production, increase in operating costs	<ul style="list-style-type: none"> <li>Adopt and develop regenerated water</li> <li>Establish a comprehensive water monitoring system</li> </ul>

## Water-related Noncompliance Records, and Corrective and Preventive Actions

TSMC has no violation record for water-related incident in last 5 years.



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Date: June, 2020