



## **Intel Ocotillo Environmental Excellence**

### **Quarterly**

## **PROGRESS REPORT**

**Issued November 30, 2011**

**(July 1 – September 30, 2011)**

### **Introduction**

This is the **2011 Third Quarter Progress Report** for the **Intel Ocotillo Environmental Excellence Program**. The Stakeholder Team consists of representatives from *Intel, the U.S. Environmental Protection Agency, the Arizona Department of Environmental Quality, Maricopa County Air Quality Department, the City of Chandler, the Gila River Indian Community, and Community Members.*

### **Q3/'11 Performance Summary**

Three items were noted in the Exceptions/Inspection section of this report. Environmental indicators reflect performance better than target goals and air emissions were below plant site emission limits. Additional details can be found in this report.

### **Contact / Report Information**

If you have any questions about this report, please call: **Len Drago (480) 715-0132, e-mail: [leonard.c.drago@intel.com](mailto:leonard.c.drago@intel.com) or Sean Aldrich, (480) 715-6528, e-mail: [sean.d.aldrich@intel.com](mailto:sean.d.aldrich@intel.com).** Additional information about Intel's Environmental Leadership results is listed on Intel's world wide web:

**<http://www.intel.com/intel/other/ehs/projectxl/index.htm>**

First time readers may wish to refer to the Glossary of Terms and respective acronyms located at the end of the report.

- The data presented in this report shows Q3/'11's progress toward the goals. The recycling percentage goal attainment is calculated using amount of materials recycled for the year divided by the amount of material generated for the year multiplied by 100 percent. Plant Site Emissions Limits (PSELs) are calculated over a rolling 12-month period (i.e., any consecutive 12 months of emissions must be below the PSEL).

- Volatile Organic Compounds (VOCs), Organic Hazardous Air Pollutants (HAPs), and Inorganic Hazardous Air Pollutants (HAPs) emissions correlate with the level of equipment installation and production activities.
- Nitrogen Oxide (NO<sub>x</sub>), Carbon Monoxide (CO), Sulfur Dioxide (SO<sub>2</sub>), and Particulate (PM<sub>10</sub>) emissions are from sources of combustion (boilers, emergency generators) and correlate to building size and climatic conditions.
- Intel's quarterly reports are designed to promote environmental awareness and provide real-time information to the public about Intel's progress toward meeting the environmental goals.
- Written comments for the data graphs may be found at the end of this report under **COMMITMENTS**.

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## QUARTERLY PROGRESS REPORT

**Intel Corporation  
Ocotillo Campus  
Chandler, Arizona**

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### REPORTING FACILITY

Intel Corporation  
Ocotillo Campus  
4500 S. Dobson Road  
Chandler, Arizona 85248

Reporting period: July 1 – September 30, 2011  
Report prepared by: Len Drago  
Telephone Number: (480) 715-0132  
Fax Number: (480) 715-5140

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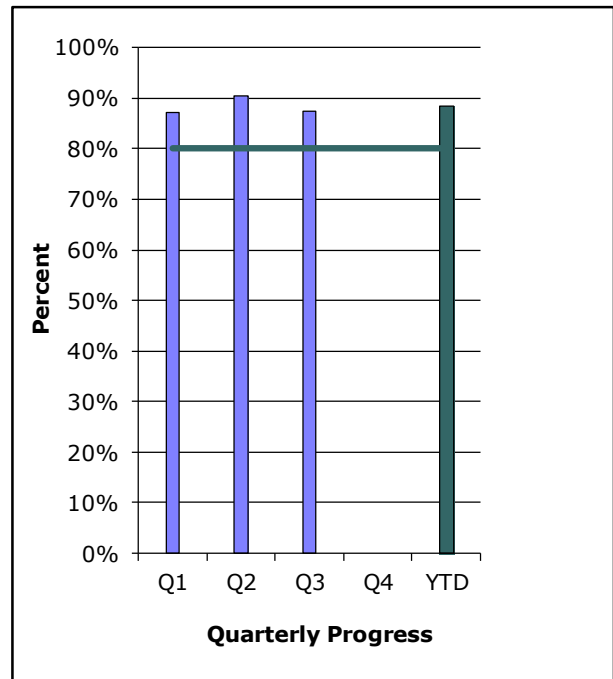
### SOLID WASTE RECYCLED

Reporting period: July 1 – September 30, 2011

Percent recycled for quarter: 88%

Percent recycled year-to-date (YTD) 88%

**7,217 TOTAL TONS  
SOLID WASTE  
RECYCLED IN Q3 2011**



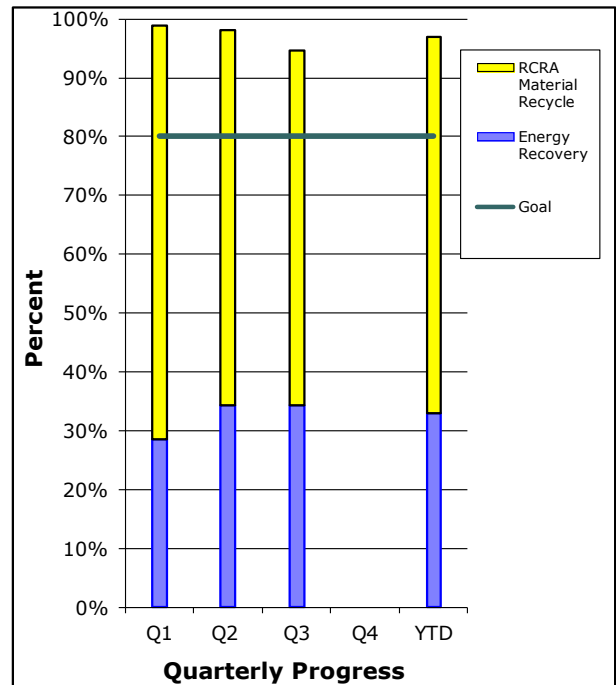
## TOTAL CHEMICAL WASTE RECYCLED

Reporting period: July 1 – September 30, 2011

Percent recycled for quarter: 95%

Percent recycled year-to-date (YTD): 97%

**1,993 TOTAL TONS  
TOTAL CHEMICAL WASTE  
RECYCLED IN Q3 2011**



## SITE WIDE WATER CONSERVATION

Reporting period: July 1 – September 30, 2011

Percent water conserved for quarter: 63%

Percent conserved year-to-date (YTD) 64%

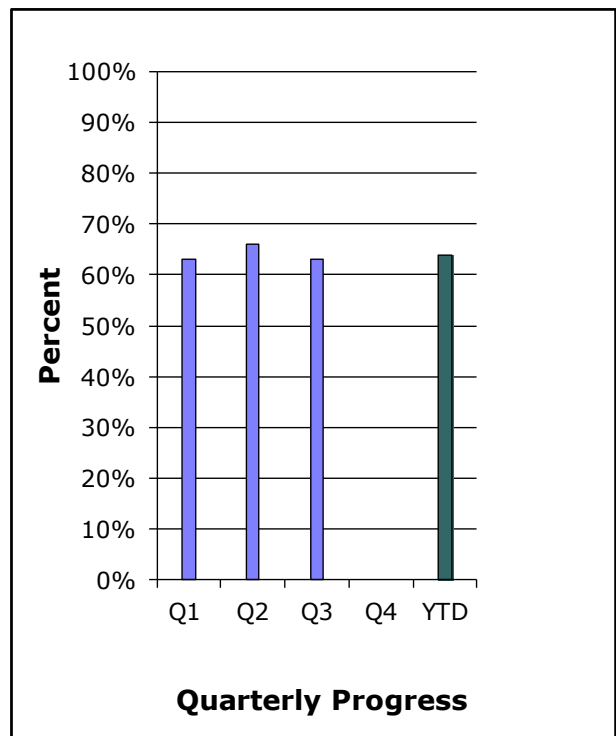
### Water Flow Details:

- Water Recycled Internally 1.99 MGD
- Reclaimed Wastewater Used 3.06 MGD
- Water Sent to Chandler RO for Groundwater Recharge 1.43 MGD
- Incoming City Water 5.31 MGD

**MGD** = Million Gallons Per Day (averaged over the quarter)

Water Recycled + Reused + Recharged  
All Water Used

$$\frac{1.99+3.06+1.43}{1.99+3.06+5.31} = 0.63 \times 100\% = 63\%$$



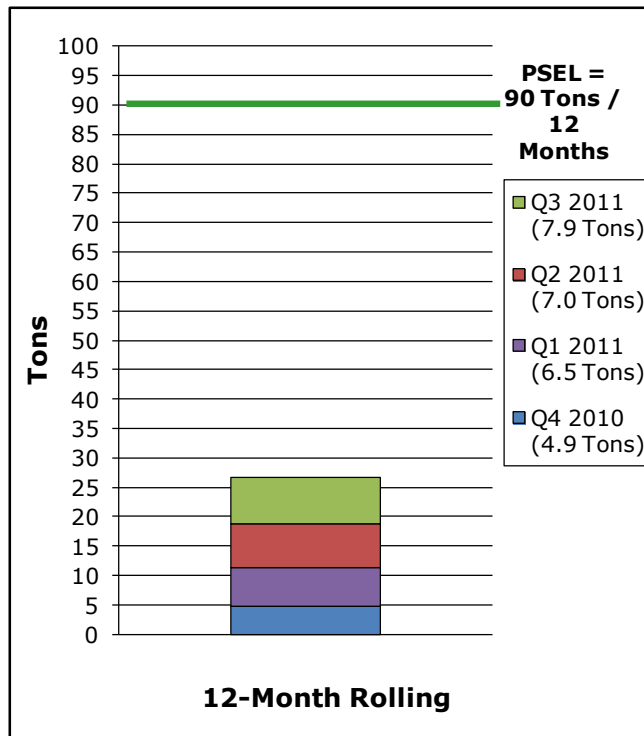
**VOLATILE ORGANIC COMPOUND (VOC) EMISSIONS**

Reporting period: July 1 – September 30, 2011

VOCs in tons for quarter: 7.9

VOCs in tons (12-month rolling summation): 26.8

Note: The sum of the quarterly data may not add to 100 percent of the annual total due to rounding.



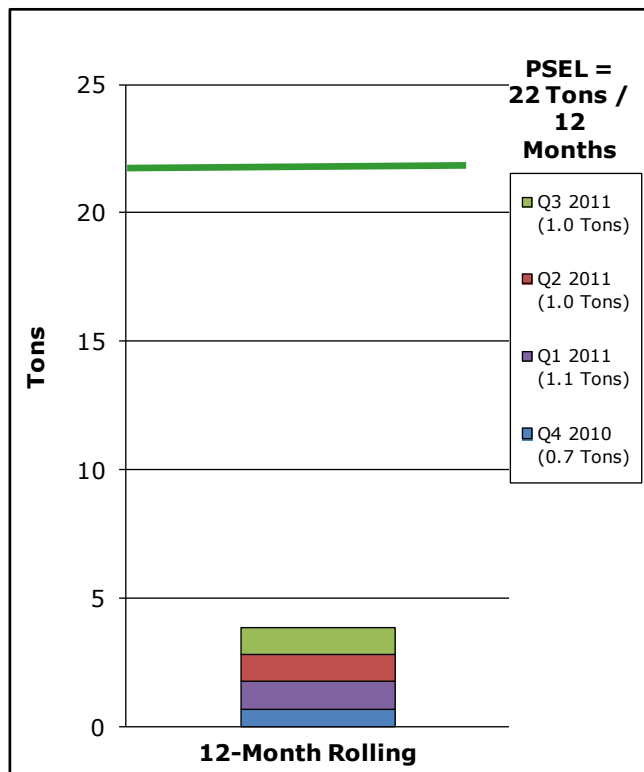
**TOTAL HAZARDOUS AIR POLLUTANTS (HAPs) EMISSIONS**

Reporting period: July 1 – September 30, 2011

Total HAPs in tons for quarter: 1.0

Total HAPs in tons (12-month rolling summation): 3.8

Note: The sum of the quarterly data may not add to 100 percent of the annual total due to rounding.



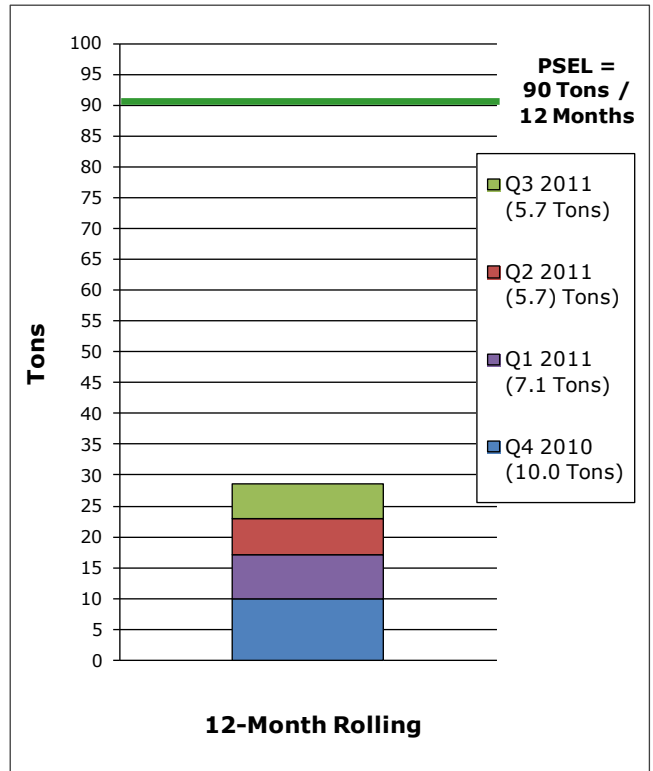
### NITROGEN OXIDE (NO<sub>x</sub>) EMISSIONS

Reporting period: July 1 – September 30, 2011

NO<sub>x</sub> emissions in tons for quarter: 5.7

NO<sub>x</sub> emissions in tons (12-month rolling summation): 28.5

Note: The sum of the quarterly data may not add to 100 percent of the annual total due to rounding.



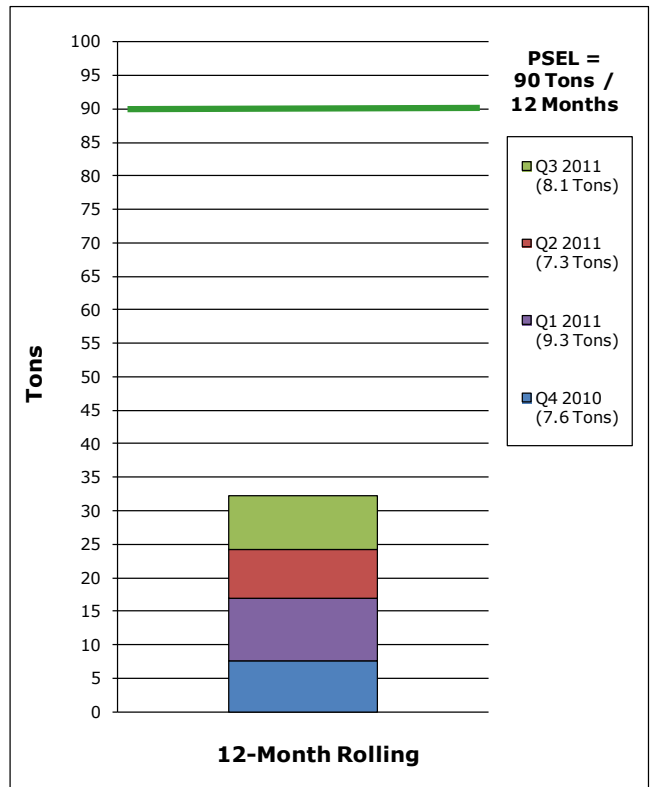
### CARBON MONOXIDE (CO) EMISSIONS

Reporting period: July 1 – September 30, 2011

CO emissions in tons for quarter: 8.1

CO emissions in tons (12-month rolling summation): 32.3

Note: The sum of the quarterly data may not add to 100 percent of the annual total due to rounding.



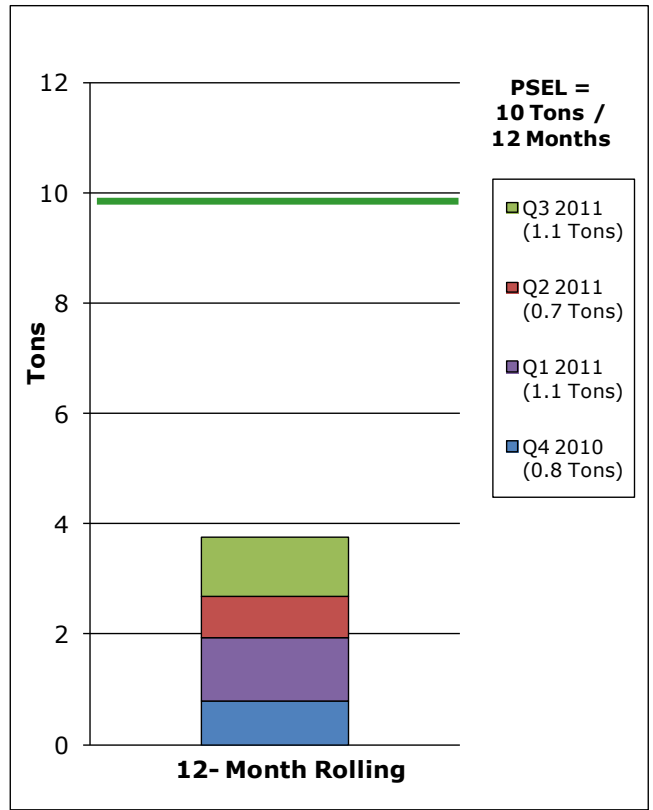
### PARTICULATE (PM10) EMISSIONS

Reporting period: July 1 – September 30, 2011

PM10 emissions in tons for quarter: 1.1

PM10 emissions in tons (12-month rolling summation): 3.8

Note: The sum of the quarterly data may not add to 100 percent of the annual total due to rounding.



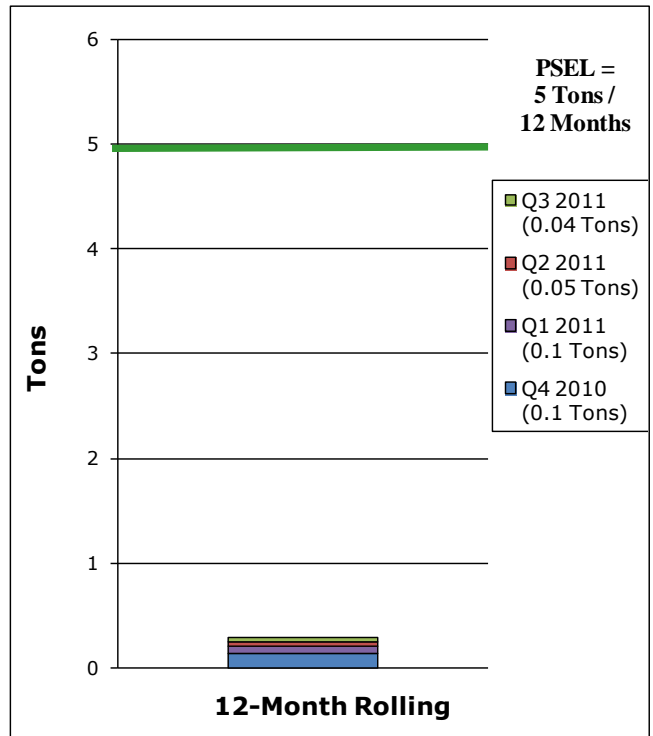
### SULFUR DIOXIDE (SO<sub>2</sub>) EMISSIONS

Reporting period: July 1 – September 30, 2011

SO2 emissions in tons for quarter: 0.04

SO2 emissions in tons (12-month rolling summation): 0.3

Note: The sum of the quarterly data may not add to 100 percent of the annual total due to rounding.



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## EXCEPTION / INSPECTION REPORTING

1. Agency inspection(s) this quarter.

Yes [ X ]                      No [ ]

**Agency:** City of Chandler Fire Department

**Date:** August 23, 2011

**Type of inspection:** Routine Annual Hazardous Materials Inspection

The Chandler Fire Department (CFD) arrived onsite Tuesday August 23<sup>rd</sup> for a routine annual hazardous materials inspection. The CFD inspector walked the chemical dock areas of all Fabs. No issues noted.

2. Has a shutdown or change in type of a pollution control device occurred this quarter?

Yes [ X ]                      No [ ]

**Date:** July 11, 2011

**Nature of shutdown:** Fab 32 Rotary Concentrator Thermal Oxidizer (RCTO) #2 and #3 Went into Bypass Mode Due to Lightning Strike to an Offsite Transformer

**Maximum estimated emissions:** 29 pounds (0.0145 tons)

On July 11, 2011 at 3:45 AM a monsoon lightning storm disrupted an offsite transformer. This resulted in a drop in voltage of up to 67% to the Intel Ocotillo campus for 8 cycles. This drop in voltage could not be recovered by our onsite Dynamic Voltage Restorer (DVR) units which are designed to correct voltage sags to maintain the required voltage to the facility. The voltage sag resulted in Process Logic Controller (PLC) loss to two RCTO units (RCTO #2 and #3), causing them to fault and shutdown. Due to the loss of the two RCTO units, the bypass damper was opened to maintain system pressure and stayed open for 48 minutes. RCTO #1 did not experience a loss of PLC control and operated within the O&M requirements the entire time.

This 48 minute bypass resulted in 29 pounds (0.0145 tons) of unabated Volatile Organic Compound (VOC) emissions from the two units. The Plant Site Emissions Limit is 90 tons of VOC per year, therefore an exceedance did not occur during this event. A notification and follow-up emission report was provided to Maricopa County Air Quality Department (MCAQD) on July 12, 2011 regarding this event.

**Date:** September 10, 2011

**Nature of shutdown:** Fab 32 Acid Fume Scrubber Malfunction

**Maximum estimated emissions:** 0.11 pounds (0.000055 tons)

The Fab 32 Acid Fume Scrubber #3 experienced a loss of water flow to the scrubber. This occurred because a rubber coupling connected between the motor and the pump failed which in turn caused a loss of water flow to the scrubber for 121 minutes. This loss of water to the scrubber resulted in 0.11 pounds of unabated Hazardous Air Pollutants (HAP) emissions from the scrubber. The HAP Plant Site Emissions Limit is 22 tons of per year, therefore an exceedance did not occur during this event. A notification and follow-up emission report was provided to Maricopa County Air Quality Department (MCAQD) on September 12, 2011 regarding this event.

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## OTHER ACTIVITIES THAT BENEFIT THE ENVIRONMENT

### Ocotillo's LEED Silver Certification Takes Away Two Valley Forward Environmental Excellence Awards!

Intel Corporation's Ocotillo Semiconductor Manufacturing Campus in Chandler has reached a significant milestone for international environmental stewardship — the four-million square-foot campus is the first of its kind in the world to receive Silver Certification under the LEED Existing Building. In September, Intel Corporation was recognized with two awards for Environmental Excellence at this year's Valley Forward Annual Awards Event <http://www.valleyforward.org/events/47/>.

#### **Environmental Stewardship - *The SRP Award***

Intel's commitment to environmental excellence and leadership has been the cornerstone of its leading-edge industrial corporate sustainability strategy. For over a decade, Intel has had an ISO 14001- certified environmental management system, implementing best known methods for environmental and operational management. A three-year effort to demonstrate sustainable practices at Intel Corporation's Ocotillo Semiconductor Manufacturing Campus has resulted in a significant milestone. The four million square foot campus is the first semiconductor manufacturing facility in the world to receive Silver Certification under the LEED Existing Building: Operations & Maintenance green building rating system.

Intel also has a global policy to design all new buildings to a minimum of LEED Silver. By publicly reporting its greenhouse gas emissions, Intel earned credit under the LEED program for active participation in the Environmental Protection Agency's Climate Leaders program. Intel partners with the city of Chandler to achieve aggressive water-reuse results, saving about five million gallons of fresh water daily. In addition, its campus's xeriscape landscape is watered by non-potable reclaimed water via drip irrigation; storm water is managed onsite with rainfall routed through drainage channels to infiltration/collection basins. Intel diverted over 10,000 tons of waste from the landfill in 2010 alone. In addition, employees are encouraged to carpool, reducing conventional commuting trips by more than 20 percent. Employees are also involved in environmental education through in-house seminars, cafeteria displays and an annual "Green-it" fair.



## **BUILDINGS AND STRUCTURES** - *Industrial & Public Works*

Operations & Maintenance green building rating system: The campus minimizes energy and water use, conserving natural resources and reducing its environmental impact.

Intel's comprehensive program ensures that all energy-using systems operate at peak efficiency. Benchmarking shows energy consumption per unit of output is 26 percent less than the international semiconductor industry average, about equal to the annual residential energy consumption of the city of Prescott. Intel was also the largest voluntary purchaser of green energy for the performance period, according to the Environmental Protection Agency. In addition, the corporation's partnership with the city of Chandler has resulted in aggressive water-reuse results. The Ocotillo campus achieved 66 percent water conservation, saving about five million gallons of fresh water per day, an annual volume that is nearly twice that of Tempe Town Lake. Further, 95 percent of cooling tower water and 100 percent of irrigation water is non-potable, delivered by a greywater pipe from the city's wastewater treatment plant directly to Intel. Solid-waste recycling, environmental purchasing, xeriscape landscaping and sustainability training also contribute to Intel's standing as a corporate leader in environmental stewardship.



## Copper Metal Donation

Intel made a donation of copper to the Arizona State University Art Department. The art students transform the donated copper into art as shown below.



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## **GLOSSARY OF TERMS**

**CARBON MONOXIDE (CO)** - CO is defined in Section 302, Subsection W of the United States Clean Air Act, as carbon monoxide. This is a combustion emission produced when fossil fuel is burned (oxidized) incompletely.

**ANNUAL REPORT** - This is a summary of progress for the previous calendar year and is published on April 30.

**QUARTERLY PROGRESS REPORT** - This is a progress report that is published by Intel on the following schedule which documents progress against its goals:

<b>REPORTING PERIOD</b>	<b>DATE PUBLISHED</b>
January, February, March	By May 31
April, May, June	By August 31
July, August, September	By November 30
October, November, December (included as part of the annual report)	By April 30

**HAZARDOUS AIR POLLUTANTS** - Hazardous Air Pollutants (HAPs) refers to the 189 chemicals and chemical categories listed in section 112(b) of the United States Clean Air Act. Under the Act, a major source of HAPs is defined as one that emits 10 tons/yr. of any single chemical on the list, or 25 tons/yr. of any combination of these chemicals.

**HAZARDOUS MATERIALS MANAGEMENT PLAN (HMMP)** - An emergency plan required by the City of Chandler for all operations, which store hazardous materials above a certain quantity on-site.

**NITROUS OXIDES** - In accordance with the definition in section 302, subsection V of the United States Clean Air Act, NO<sub>x</sub> refers to oxides of nitrogen. The oxides of nitrogen typically emitted from combustion processes are nitrogen monoxide (NO) and nitrogen dioxide (NO<sub>2</sub>).

**OTHER ACTIVITIES THAT BENEFIT THE ENVIRONMENT** - Intel has committed to voluntarily engage in other activities, which may connect back to programs implemented by Intel Arizona and/or Intel's corporate programs. The items that will be reported on include:

- Environmental mentoring/education
- Donation of equipment
- Environmental activities with suppliers
- Energy Conservation
- Transferability

**LEED** – Stands for Leadership in Energy and Environmental Design. This Green Building Rating System encourages and accelerates global adoption of sustainable green building and development practices through the creation and implementation of universally understood and accepted tools and performance criteria.

(source: <http://www.usgbc.org/DisplayPage.aspx?CMSPageID=222>. See LEED Rating System for Existing Buildings)

**PARTICULATE MATTER (PM10) EMISSIONS** - Airborne particulate matter with an aerodynamic diameter less than or equal to 10 microns (PM10) as defined in 40 CFR 51.100(qq).

**PLANT SITE EMISSIONS LIMITS (PSEL)** - The air permit establishes PSELs for emissions (tons per year (tpy)) of volatile organic compounds (VOCs/49 tpy), oxides of nitrogen (NOx/49 tpy), carbon monoxide (CO/49 tpy), particulate matter of 10 microns or smaller (PM10/10 tpy), sulfur dioxide (SO2/5 tpy), combined organic hazardous air pollutants, (HAPs/10 tpy), combined inorganic HAPs (10 tpy), sulfuric acid (1 tpy) and phosphine-also an inorganic HAP(1 tpy).

**REGULATORY AGENCIES** - The following are the regulatory agencies who participate in the Intel Ocotillo Environmental Excellence Stakeholder meetings:

ADEQ - Arizona Department of Environmental Quality  
City of Chandler

EPA - U.S. Environmental Protection Agency

MCAQD - Maricopa County Air Quality Department

**RESOURCE CONSERVATION AND RECOVERY ACT (RCRA)** - Refer to the statutes and promulgated EPA regulations in 40 CFR 260 through 282 which address the generation, storage, treatment and disposal of hazardous waste.

**REVERSE OSMOSIS (RO)** - Reverse Osmosis is a high-pressure filtration process which separates dissolved salt and minerals from water, using a membrane. Clean water passes through the membrane, and the salt and minerals are rejected.

**SOLID WASTE RECYCLE** - This includes materials that are designated as non-hazardous waste, based upon EPA's definitions under the Resource Conservation and Recovery Act, which include such materials as, plastics, aluminum, glass, wood, pallets, metal, cardboard, etc. The percent recycled is calculated by dividing the quantity of materials within this category that are sent to beneficial recycle by the total volume of solid waste shipped off-site.

**SULFUR DIOXIDE (SO<sub>2</sub>)** - This is an oxide of sulfur, which is emitted during the combustion of fossil fuels.

**SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT (SARA) - TITLE III** - Refers to the statutes and promulgated EPA regulations, which address Emergency Planning and Community Right-to-Know.

**TOTAL CHEMICAL WASTE RECYCLE** - This category includes used chemical materials, which are collected for the purpose of returning them back into beneficial reuse via recycling, re-use, reclaim or fuel blending. The percent recycled is calculated by dividing the material in this category sent for beneficial reuse, divided by the total quantity of chemical waste generated.

**TOTAL DISSOLVED SOLIDS** - A measurement of the salt and mineral content in water.

**VOLATILE ORGANIC COMPOUNDS** - Volatile Organic Compounds (VOCs) are any compound of carbon which participate in atmospheric photochemical reactions, except those which are specifically excluded, as defined in 40 CFR 51.100(s).

**WATER CONSERVATION** - Efforts to Reduce, Reuse or Recycle water to avoid the use of the City of Chandler's drinking water supply.