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Title:	**Individual Permit Storm Water Monitoring Results for the 2011 and 2012 Monitoring Season, Poster, Individual Permit for Storm Water, NPDES Permit No. NM0030759**
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Intended for:	Public
Purpose:	This poster was prepared for the June 2013 Individual Permit for Storm Water (IP) public meeting. The purpose of the meeting was to update the public on implementation of the permit as required under Part 1.I (7) of the IP (National Pollutant Discharge Elimination System Permit No. NM0030759). The poster will be available on Los Alamos National Laboratory's (LANL's) public website.

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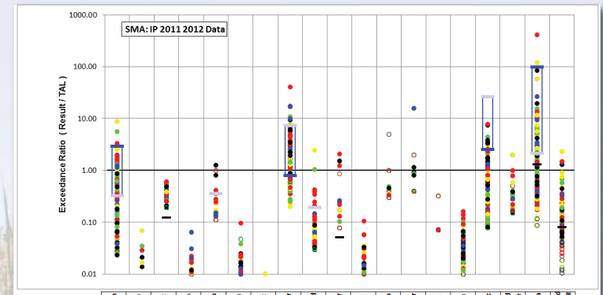
Individual Permit Storm Water Monitoring Results for the 2011 and 2012 Monitoring Season

INTRODUCTION

Under the Individual Permit (IP), storm water runoff from solid waste management units (SWMUs) at Los Alamos National Laboratory (LANL) is controlled and monitored for pollutants. As part of the monitoring program, storm water samples are collected and analyzed for a list of constituents and compared with target action levels (TALs) specified in the IP. If a TAL exceedance is detected, additional controls are installed to mitigate storm water runoff from the site. The performance of storm water controls, analytical results, and additional information are reported each year to the regulatory authority (U.S. Environmental Protection Agency [EPA]) and are available on the IP website. This poster presents the sequence of events LANL staff perform to collect and process storm water samples. Analytical results for monitoring years 2011 and 2012 are presented as well.

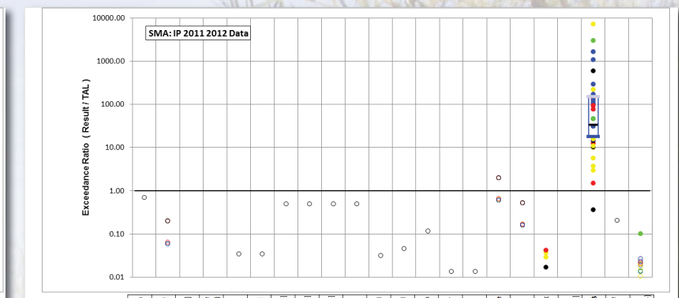
Metal and Radiological Results Normalized to TALs



	Aluminum	Antimony	Arsenic	Boron	Cadmium	Chromium	Cobalt	Copper	Lead	Mercury	Nickel	Selenium	Silver	Thallium	Vanadium	Zinc	Cyanide, weak acid dissociable	Gross alpha	Radium-226 and Radium-228
std used in ratio calculations	MTAL	ATAL	ATAL	ATAL	MTAL	MTAL	ATAL	MTAL	MTAL	ATAL	MTAL	ATAL	MTAL	ATAL	ATAL	MTAL	ATAL	ATAL	ATAL
std value	750	640	9	5000	1	210	1000	4.3	17	0.77	170	5	0.5	6.3	100	42	0.01	15	30
unit	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	mg/L	pCi/L	pCi/L

MTAL = Maximum target action level.
ATAL = Average target action level.

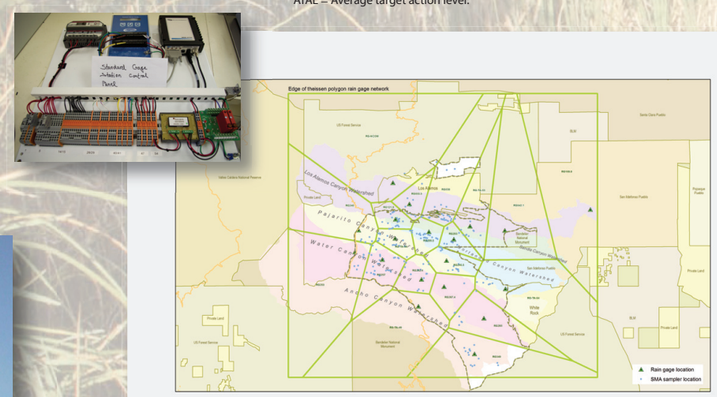
Organic Results Normalized to TALs



	Aldrin	Benzo(a)pyrene	Bis(2-ethylhexyl)phthalate	Chlordane (alpha+gamma)	Chlordane(alpha)	Chlordane(gamma)	DDD[4,4']	DDE[4,4']	DDT[4,4']	Dieldrin	Endosulfan I	Endosulfan II	Endrin	Heptachlor	Heptachlor Epoxide	Hexachlorobenzene	Pentachlorophenol	RDX	Tetrachlorodibenzo-p-dioxin[2,3,7,8]	Total PCB	Toxaphene (Technical Grade)	Trinitrotoluene [2,4,6]
std used in ratio calculations	ATAL	ATAL	MTAL	-	ATAL	ATAL	ATAL	ATAL	ATAL	ATAL	MTAL	MTAL	MTAL	MTAL	MTAL	ATAL	MTAL	ATAL	-	ATAL	MTAL	ATAL
std value	0.01	5	0.95	-	0.2	0.2	0.02	0.02	0.02	0.02	0.22	0.22	0.086	0.52	0.52	5	19	200	-	6E-04	0.73	20
unit	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L

IP monitoring metals and radiological results from the 2011 and 2012 monitoring season are presented above. Analytical results for each analyte presented on the plots are normalized by calculating an exceedance ratio. This ratio is defined as the analytical result divided by the applicable TAL. Thus, results exceeding the TAL will be greater than an exceedance ratio of 1.0. The exceedance ratios are plotted on a log scale to display a larger range of values. Nondetects are shown as open black circles; detects are shown as filled colored circles. Different colors represent different sample collection dates. When available, the range of background and baseline upper tolerance limits (UTLs) for urban developed landscape (light blue) and nondeveloped landscape (dark blue) are displayed as a box plot. Background UTLs can be thought of as new TALs, replacing those presented in the IP. The most common exceedances include aluminum, copper, zinc, and gross alpha. Cyanide, radium-226, and radium-228 occasionally appear above the exceedance ratio line but are generally below the TAL or are not detected at all.

Samples are analyzed at select contract laboratories following defined EPA Clean Water Act standard analytical methods. Results are delivered back to LANL, uploaded into the Environmental Information Management (EIM) system, and validated. The results are available to the public through EIM.



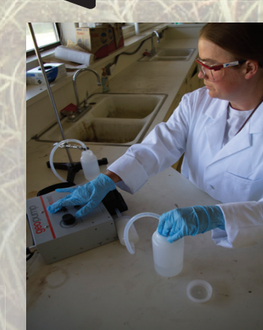
Meteorological tower

During the monitoring season, the storm water program at LANL relies on precipitation data measured at the program rain gage network and LANL's meteorological towers. The rain gage network and site monitoring areas (SMAs) are shown in the graphic above. Using a geographic information system, storm water monitoring stations are assigned to an individual rain gage using the method of Theissen polygons (see above; green lines). After a precipitation event, the rain gages provide the storm water team with specific rainfall amounts. If the preestablished trigger precipitation amount is reached (for example, 0.25 in./30 min), a sampler inspection work order is issued. Because 250 locations are monitored under the IP, the use of the rain gage network allows the storm water team to respond to areas (polygons) where precipitation likely resulted in runoff instead of visiting all the monitoring locations to check for samples.

New Mexico receives up to half its annual rainfall during the summer monsoon season. LANL monitors storm water discharge from June to November; the summer monsoon typically runs from July to September.

BEGIN HERE

Following a precipitation event, a member of the storm water team inspects the site monitoring area (SMA) automated sampler and retrieves the storm water samples. The samples are placed on ice in a cooler and delivered to the storm water laboratory for processing.



After they are delivered to the processing facility, the samples are processed and preserved according to the appropriate specific guidance for each analytical suite.

Once the samples have been processed, they are delivered to LANL's Sample Management Office (SMO). The SMO is responsible for packaging and shipping samples to the different analytical laboratories.

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