



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
REGION IX  
75 Hawthorne Street  
San Francisco, CA 94105

June 9, 2008

In Reply Refer To: WTR-7

Malcolm Hill, President  
Diablo Industries  
2245 Meridian Blvd., Suite E  
Minden, Nevada 89423

**Re: November 27, 2007 Clean Water Act Inspection**

Dear Mr. Hill:

Enclosed is the report for our November 27, 2007 inspection of Diablo Industries. Please submit a short response to the findings in Sections 2 through 4 of this report, to EPA, Douglas County, and the Nevada DEP, by **July 30, 2008**.

The main findings are summarized below:

- 1 Diablo Industries qualifies as a “zero-discharging” new source metal finisher since it generates but does not discharge Federally-regulated wastewaters.
- 2 Douglas County should issue a permit that requires periodic “zero-discharge” self-certification. Waste manifests should accompany the self-certifications.
- 3 Diablo Industries achieves “zero-discharge” compliance through effective wastewater collection, evaporation, wastewater reuse, and off-site disposal. As a result, Diablo Industries should seal the non-domestic sewer connections.

I appreciate your helpfulness. I remain available to assist Diablo Industries, Douglas County, or the State of Nevada in any way. Please do not hesitate to call me at (415) 972-3504 or e-mail at [arthur.greg@epa.gov](mailto:arthur.greg@epa.gov).

Sincerely,

*Original signed by:*

Greg V. Arthur  
CWA Compliance Office

Enclosure

cc: Kathy Poole, Douglas County  
Joe Maez, Nevada DEP



**U.S. ENVIRONMENTAL PROTECTION AGENCY**

**REGION 9**

**CLEAN WATER ACT COMPLIANCE OFFICE**

**NPDES COMPLIANCE EVALUATION INSPECTION REPORT**

Industrial User: Diablo Industries  
2245 Meridian Blvd., Suite E, Minden, Nevada 89423  
40 CFR 433 - New Source Metal Finishing

Treatment Works: Douglas County  
North Valley Wastewater Treatment Facility  
Nevada Permit NEV60025

Pretreatment Program: None

Date of Inspection: November 27, 2007

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Inspection Participants:

US EPA: Greg V. Arthur, Region 9, CWA Compliance Office, (415) 972-3504  
Anna Yen, Region 9, CWA Compliance Office, (415) 972-3976

State of Nevada: None

Douglas County: Kathy Poole, (775) 782-6274

Diablo Industries: Malcolm Hill, President (775) 782-1041  
Pete Negralls, Manufacturing Mgr, (775) 782-1041  
Bob Campbell, Safety Mgr, (775) 782-1041

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Report Prepared By: Greg V. Arthur, Environmental Engineer  
June 9, 2008



## **1.0 Scope and Purpose**

On November 27, 2007, EPA, and Douglas County conducted a compliance evaluation inspection of Diablo Industries in Minden, Nevada. The purpose was to ensure compliance with the Federal regulations covering the discharge of non-domestic wastewaters into the sewers. In particular, it was to ensure:

- Classification in the proper Federal categories;
- Application of the correct standards at the correct sampling points;
- Consistent compliance with the standards; and
- Fulfillment of Federal self-monitoring requirements.

Diablo Industries is a significant industrial user (“SIU”) within the sewer service area of the Douglas County, North Valley Wastewater Treatment Facility (“WWTF”) whose compliance was assessed as part of an on-going EPA evaluation of industrial users in sewer districts and municipalities without EPA-approved pretreatment programs. The inspection participants are listed on the title page. Arthur conducted the inspection on November 26, 2007.

## **1.1 Process Description**

Diablo Industries manufactures prototype thin-film printed circuit devices on aluminum nitride and aluminum oxide ceramic substrates. Diablo Industries does not make photo-masks. The operations involve (1) board preparation through soda ash soaking, (2) vacuum deposition sputtering of titanium/tin, gold, nickel, tantalum nitride, and copper, (3) cyanide-gold plating, (4) photo resist exposure and development, (5) metals etching, (6) photo resist stripping with isopropyl alcohol, and finish packaging. The etchants vary depending on the deposited metals - sulfuric/hydrofluoric acids for tantalum, potassium iodide for gold, nitric acid and ammonium nitrate for chromium, nitric and phosphoric acids for aluminum, and ammonium chlorides for copper. The operations moved to Minden, Nevada in 1995.

## **1.2 Facility SIC Code**

Diablo Industries is assigned the SIC codes for the manufacturing of semiconductors and related devices (SIC 3674).

## **1.3 Facility Wastewater Sources**

Diablo Industries generates very small volumes of process-related wastewaters, some of which were found during this inspection to discharge to the sewers. Since this inspection, Diablo Industries reported that it has instituted new wastewater handling methods to allow manufacturing operations without discharging wastewaters to the sewers.

On the day of this inspection, facility processes generated a number of wastewaters for disposal through (1) off-hauling as hazardous, (2) evaporation and reclaim, or (3) the



discharge to the sewers. There were four identified sink drains to the sewers receiving wastewaters from the soda ash soak and rinse, the photo resist strip second-stage rinse, the etching second-stage rinse, and the final finishing cleaning of beakers. First-stage static rinses for gold plating and etching were collected for on-site evaporation or were returned to the solution tanks. First-stage static rinses for photo resist developing and photo resist stripping were collected for on-site evaporation. Spent solutions were collected to barrels for off-site reclaim or disposal as hazardous. Spent DI columns were serviced by US Filter.

Wastewaters - November 2007		
spent etchants photo resist strip spends gold plating spends	gold plating 1°-static rinse etching 1°-static rinse photo resist develop 1°-static photo resist strip 1°-static	soda ash soak rinse photo resist strip 2°-rinse etching 2°-rinse final finish cleaning
Off-Hauled for Disposal	Reclaim/Evaporation On-site	Discharged to the Sewers

Since the inspection, Diablo Industries has eliminated discharge to the sewers. Diablo Industries has attempted to reclaim on-site rinse waters through ion exchange in order to permit the evaporation of all wastewaters on-site. However, fouling from organics in the rinses prevented full reclaim. As a result, Diablo Industries reports that ~95% of all wastewater effluent is evaporated through an existing 30 gph evaporator, with the remaining wastewaters and evaporator residuals off-hauled as hazardous. Diablo Industries has indicated an intention to install a larger 300 gph evaporator in order to limit off-hauling to evaporator residuals.

Wastewaters - Expected after Completion of July 2008 Upgrades		
evaporator residuals spent etchants photo resist strip spends gold plating spends spent DI columns	gold plating 1°-static rinse etching 1°-static rinse photo resist develop 1°-static etching 2°-rinse photo resist strip 1°-static photo resist strip 2°-rinse soda ash soak rinse final finish cleaning	
Off-Hauled for Disposal	Reclaim/Evaporation On-site	Discharged to the Sewers

#### 1.4 Facility Process Wastewater Handling

Composition - The process-related wastewaters that were discharged to the sewers would have been expected to contain the pollutants involved in etching (*nickel, titanium, copper, chromium, tin, acids, nitrogen compounds, salts*), in photo resist (*isopropyl alcohol, xylene, acetone*), and in the ceramic board composition (*aluminum, nitrogen compounds*).



Treatment - Diablo Industries did not and does not treat wastewaters for discharge to the sewers. Instead, Diablo Industries provides collection, on-site evaporation, and off-site disposal of residuals and excess wastewaters. Upgrades are expected to result in increased evaporation capacity and rinse water recycling through ion exchange. The recycling will limit the amount of wastewaters for disposal to just the ion exchange column regenerant.

Delivery - Overflow rinses when they discharged were delivered to the sewers by direct dedicated pipe drainage. The delivery of wastewaters to reclaim, evaporation, or off-site delivery barrels was and is by bucket.

Discharge - On the day of this inspection, process-related wastewaters discharged without treatment through a number of floor drains to the sewers. Diablo Industries has indicated that there are no longer any process-related discharges to the sewers. *See* the photos in Section 1.7 of this report. *Also* see Section 3.2 of this report.

Hazardous Waste Handling - Diablo Industries contracts with Safety-Kleen to haul off-site spents, excess rinses, and evaporator residuals.

## 1.5 POTW Wastewater Treatment

POTW Configuration – The North Valley WWTF is secondary treatment plant involving a hybrid pond of activated sludge and extended aeration with anoxic zones to provide some denitrification, followed by secondary clarification, disinfection, and effluent storage. The North Valley WWTF treats 0.45 million gallons per day on average, of domestic and non-domestic wastewaters, including the wastewaters generated by Diablo Industries, for disposal through irrigation and infiltration.

State and Federal Legal Authorities – Douglas County operates the North Valley WWTF under the authority of NDEP permit NEV60025 for the discharge of treated wastewater for reclaim and to the ground water. Douglas County does not possess a Federal NPDES permit issued under the Clean Water Act because the treated wastewaters do not discharge to surface waters. Nevertheless, Douglas County does qualify as a publicly-owned treatment works (“POTW”) under the Federal definition in 40 CFR 403.3(o) because the wastewater treatment plant treats mixed domestic and non-domestic wastewaters and the generated sludges are regulated under the Clean Water Act by the Federal regulations in 40 CFR 503.

## 1.6 Legal Authorities

NDEP Permit for Douglas County - Permit NEV60025 does not require Douglas County to obtain an approved pretreatment program nor does it impose any specific pretreatment provisions. This is in keeping with the Federal regulations in 40 CFR 403.8(a) that allow for, but do not mandate, States or EPA to require small publicly-owned treatment works (“POTWs”) with design capacities under 5.0 mgd to obtain approved pretreatment programs. As a result, there is no local permit for the discharge from Diablo Industries to the sewers. Nevertheless, Douglas County has enacted a sewer use ordinance (Appendix D of Title 20)



that contains general prohibitions against discharges contributing to interference, pass-through, explosive conditions, public nuisance, radioactivity, cyanide over 2.0 mg/l, and pH outside 5.5 and 9.0 s.u. The ordinance does not establish any other specific numerical local limits to protect the sewer systems from the adverse effect of non-domestic waste-waters. It has not been reviewed by EPA as part of an approved pretreatment program.

### 1.7 Sampling Record

When rinses were discharged to the sewers, Diablo Industries did not self-monitor twice per year for metals, cyanide, toxic organics, pH, or flow. Self-monitoring is not required now that Diablo Industries has ceased the discharge of process-wastewaters to the sewers.

### 1.8 Photo Documentation

Two of three photographs taken during this inspection are depicted below. The photographs are saved as *diablo-1.jpg* through *-3.jpg*.

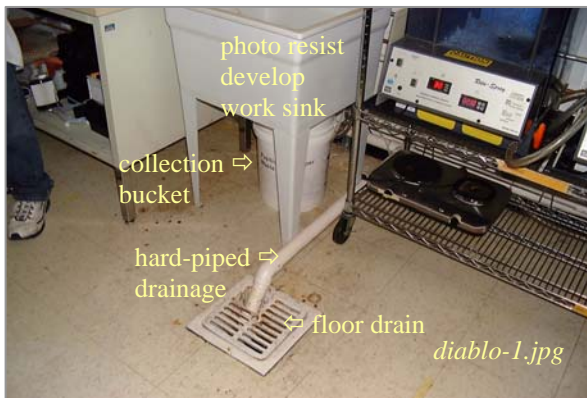


Photo #2: Work Table Drain Pipe / Floor Drain  
Taken By: Greg V. Arthur  
Date: 11/27/07



Photo #1: Photo Resist Work Table / Floor Drain  
Taken By: Greg V. Arthur  
Date: 11/27/07



## 2.0 Sewer Discharge Standards and Limits

*Federal categorical pretreatment standards (where they exist), national prohibitions, State groundwater, and the local limits (where they exist) must be applied to the sewered discharges from industrial users. (40 CFR 403.5 and 403.6).*

### **Summary**

No Federal categorical pretreatment standards, national prohibitions, or local limits apply because there are now no process-related wastewater discharges to the sewers. Diablo Industries does generate wastewaters that would be regulated if they were discharged. The application of standards, prohibitions, and limits was determined through visual inspection.

### **Requirements**

- None.

### **Recommendations**

- Douglas County should issue a zero-discharge permit specifically prohibiting any discharge to the sewers.
- Douglas County should require, as part of any permit, semi-annual certifications by Diablo Industries of “no discharge”.

## 2.1 Classification by Federal Point Source Category

Diablo Industries would qualify as a new source metal finisher subject to the Federal standards in 40 CFR 433 if it still discharged wastewaters to the sewers. It would not qualify as an existing source, because operations began after the August 31, 1982 promulgation date of the metal finishing rule, or under any other Federal rule in 40 CFR 407-471.

## 2.2 Local Limits and National Prohibitions

Local limits and national prohibitions are meant to express the limitations on non-domestic discharges necessary to protect the sewers, treatment plants, their sludges and receiving waters from adverse impacts. A "zero discharge" requirement in a permit would be the expression of the local limits and national prohibitions.

National Prohibitions – For POTWs to surface waters, the national prohibitions in 40 CFR 403.5 prohibit discharges that can cause the pass-through of pollutants into the receiving waters, the operational interference of the treatment works, the contamination of the sewage sludge, sewer worker health and safety risks, fire or explosive risks, and corrosive damage to the sewers. However, pass-through and interference as defined in the Federal pretreatment





regulations only occur when NPDES permit limits are violated. So in this case, without an NPDES permit for Douglas County, the national prohibitions cannot prohibit discharges that result in violations of the NDEP ground water permit either through the pass-through of pollutants or through an operational interference. They do however prohibit discharges that cause interferences resulting in unpermitted discharges or bypasses to surface waters.

Local Limits – Local limits derived from 40 CFR 403.6 are meant to protect the specific POTW from adverse impacts including violations of all Federal and State permits. So far, however, while there are narrative prohibitions in the Douglas County sewer use ordinance that are essentially equivalent to the national prohibitions, there are no numerical local limits beyond 2.0 mg/l cyanide and pH’s outside of 5.5 to 9.0. Douglas County has to derive and adopt local limits based on the performance of the wastewater treatment plant as well as the current regulatory requirements expressed in the NDEP permit and the Federal sludge regulations. Once adopted, they would apply to all non-domestic discharges in its service area.

**2.3 Federal Categorical Pretreatment Standards  
 New Source Metal Finishing - 40 CFR 433.17**

40 CFR 433.17	Cd	Cr	Cu	Pb	Ni	Ag	Zn	CNa	CNt	TTO
daily-maximum (mg/l)	0.11	2.77	3.38	0.69	3.98	0.43	2.61	0.86	1.20	2.13
monthly-average (mg/l)	0.07	1.71	2.07	0.43	2.38	0.24	1.48	0.32	0.65	-

Applicability - Under 40 CFR 433.10(a), the metal finishing standards apply to the process wastewaters from electroplating (*gold*) and etching (*ceramics, metals*). The metal finishing standards "... apply to plants that perform ..." the core operations of electroplating, electroless plating, etching, anodizing, chemical coating, or printed circuit board manufacturing and they extend to other on-site operations associated with metal finishing specifically listed in 40 CFR 433.10(a), such as cleaning (*soak, photo resist*), vacuum metalizing, sputtering, solvent degreasing, and assembly. If a core operation is performed, the new source metal finishing standards apply to all discharges from any core or associated operations.

**2.4 Compliance Sampling**

There are no longer any identified process wastewater discharges to the sewers. As a result, there are no sampling points for the non-domestic wastewaters.

**2.5 Pollutants of Concern**

There are no pollutants of concern as long as Diablo Industries does not discharge any process-related wastewaters. However, the pollutants of concern for sewer reconnaissance could comprise some of those regulated by the Federal new source metal finishing standards (*copper, chromium, nickel, lead, zinc, cyanide*), and the national prohibitions (*pH*).





### **3.0 Compliance with Federal Standards, National Prohibitions, and Local Limits**

*Industrial users must comply with the Federal categorical pretreatment standards that apply to their process wastewater discharges. 40 CFR 403.6(b).*

*Categorical industrial users must comply with the prohibition against dilution of the Federally-regulated waste streams as a substitute for treatment. 40 CFR 403.6(d).*

*Industrial users must comply with the provision restricting the bypass of treatment necessary to comply with any pretreatment standard or requirement. 40 CFR 403.17(d).*

*All non-domestic wastewater discharges to the sewers must comply with local limits and the national prohibitions. 40 CFR 403.5(a,b,d).*

#### ***Summary***

Diablo Industries achieves compliance with the Federal standards, national prohibitions, and local limits by not discharging to the sewers. Compliance is achieved through the collection, evaporation, reuse, and off-site hauling of generated wastewaters. There is no possibility to violate the prohibition against dilution as a substitute for treatment or the bypass prohibition. Submitting waste manifests would confirm “zero-discharge” compliance.

#### ***Requirements***

- None.

#### ***Recommendations***

- Diablo Industries should seal all non-domestic connections to the sewers in the processing areas of the facility.

### **3.1 National Objectives**

The general pretreatment regulations were promulgated in order to fulfill the national objectives to prevent the introduction of pollutants that:

- (1) cause operational interference with sewage treatment or sludge disposal,
- (2) pass-through sewage treatment into the receiving waters or sludge,
- (3) are in any way incompatible with the sewerage works, or
- (4) do not improve the opportunities to recycle municipal wastewaters and sludge.

This inspection did not include an evaluation of whether achievement of the national objectives in 40 CFR 403.2 have been demonstrated by the Douglas County wastewater treatment plant through consistent compliance with their sludge and discharge limits.



#### **4.0 Compliance with Federal Monitoring Requirements**

*Significant industrial users must self-monitor for all regulated parameters at least twice per year unless the sewerage agency monitors in place of self-monitoring. 40 CFR 403.12(e) & 403.12(g).*

*Each sample must be representative of the sampling day's operations. Sampling must be representative of the conditions occurring during the reporting period. 40 CFR 403.12(g) and 403.12(h).*

##### ***Summary***

Diablo Industries does not qualify as a significant industrial user since it cannot discharge its Federally-regulated wastewaters to the sewers. As a result, it is not necessary for Douglas County to issue a permit with self-monitoring requirements. Since compliance is achieved through zero-discharge practices, it is appropriate for Douglas County to issue a permit that substitutes a written certification of no discharge in lieu of semi-annual self-monitoring.

##### ***Requirements***

- None.

##### ***Recommendations***

- Semi-annual self-certification statements should include copies of the hazardous waste manifests documenting the off-hauling of spents, spent static rinses, and residuals.