

## Technical Support Document (TSD)

### **I. GENERAL COMMENTS:**

#### **A. Company Information**

Source Address:

HVF Precious Metals LLC  
5657 South Wilmot Road,  
Tucson, Arizona 85706

#### **B. Background**

This facility previously operated as Allied Precious Metals Recycling Company, Inc., under Pima County's former 1-year installation and operating permit program. The permit was first issued in February 1975. Since conception the facility has operated as a metal recycling facility operating an aluminum sweat furnace. This furnace was also used for the recovery of chromium oxide from chromium oxide tape.

During the mid 1980's the facility expanded operations to include a precious metal recovery process. This process recovers precious metals from scrap. The equipment used in the process include: a burn out oven, a rotary furnace, a square smelter furnace, a tilt furnace, a pot furnace, hammer and balls mills, and various electro strip baths.

In approximately 1992 the facility ceased all operations of aluminum recovery through sweating. The facility also ceased the recovery of chromium oxide recovery from chromium oxide tape.

On February 9, 2009, Pima County Department of Environmental Quality (PDEQ) received an application for a permit transfer. The operating permit, Technical Support Document (TSD) and Potential to Emit (PTE) documents remain as written from information submitted in the renewal permit application submitted by the previous Permittee (Allied Precious Metals Recycling Company, Inc.) dated August 10, 1994, updated June 10, 2004.

On June 27, 2009 PDEQ received a permit renewal application. The application was submitted by HVF Precious Metals, LLC. This technical support document is prepared to in response to the permit renewal application.

#### **C. Attainment Classification**

The facility is located in an area that is in attainment for all pollutants.

### **II. SOURCE DESCRIPTION**

#### **A. Process Description**

The facility is a metal recycling facility; specifically for the recovery of ferrous, hazardous, non-hazardous and precious metals. All materials stored, processed and transported off site are commodities of commercial value. The process for the recovery of precious metals is identified in the flow diagram (Attachment 1) and is comprised of the following operations:

1. Base Metals Processing
2. Smelting Process
3. Refining Process

### Base Metals Processing

The processing of base metals simply consists of sorting, shear/bailing, packaging and shipping. There are no identified air emissions from the base metal processing operation.

### Smelting Process

The smelting process is designed to recover precious metals from encapsulated precious metal scrap (EnPMS). Integrated circuit boards form the bulk of the EnPMS material. The EnPMS is thermally reduced in either a Rotary Furnace or the Square Smelter Furnace. This thermal reduction operation results in two material process streams; a vapor phase stream and a solid phase stream. The vapor waste stream is passed/ processed through a scrubber system and a baghouse to recover precious metals. The solid waste stream is processed through a ball mill to further reduce the solid phase stream into a fine particulate; Precious metals are then removed from the particulate by a screening process.

### Refining Process

The refining process is designed to recover precious metals from exposed precious metal scrap (ExPMS). The recovery operation involves immersing the ExPMS material into a cyanide solution to form a precipitate and then removing precious metals from the precipitate by electro-winning and/or precipitation. The recovered precious metal is melted in a Tilt or Pot furnace to form ingots.

Potential emission points at the source include:

1. the American Air Filter (AFF) baghouse; (Main Furnace and Rotary Furnace);
2. the Assay Lab/Sampling baghouse;
3. the Secondary Hood emission baghouse for the furnace door exhaust (Main Furnace Only);
4. the Ball mill baghouse;
5. the Refinery baghouse – Tilt;
6. the Refinery baghouse – Pot;
7. the Sampling baghouse; and
8. natural gas combustion emissions from the furnaces.

The facility operations have the potential to emit the following air pollutants PM<sub>10</sub>, NO<sub>x</sub>, SO<sub>x</sub>, CO, VOC and HAPs.

## **B. Air Pollution Control Equipment**

The facility emission control operations include eight (8) individual baghouse operations and two (2) scrubber systems. The facility process flow diagram is presented in Attachment 1 of this TSD.

A canopy-type hood is readily available on all equipment to capture fume emissions from the facility operations. All emissions collected in this manner are directed to each assigned process baghouse.

## **III. REGULATORY HISTORY**

### **A. Testing & Inspections**

The facility has been permitted since 1975 and has undergone regular inspections to date. In January 2000, Pima County Department of Environmental Quality (PDEQ) issued a compliance status letter to the facility. The non-compliance arose from the source failing to prevent visible emissions exiting the furnace feed door. This enforcement action was adequately resolved and subsequently closed in February 2000. The Permittee is currently in compliance with their permit conditions.

**B. Excess Emissions**

The facility has submitted no reports of excess emissions.

**IV. EMISSIONS ESTIMATES**

The potential particulate matter emissions have been determined from actual operation records from January 1 through August 17, 2012. The Permittee is not required to demonstrate compliance with the emissions-discharge mass limiting standard of Pima County Code 17.16.170.C.1. This determination is based on the following:

1. The potential to emit calculations demonstrate that no PM pollutants are emitted in significant quantities. Significant is defined by Pima County Code as quantities that would meet or exceed the permitting thresholds. At 8760 hours of operation per year the source would emit 3.97tpy of PM<sub>10</sub>—far below the significance (permitting) and major source thresholds.
2. The source has historically maintained compliance with all applicable emission limitations throughout the permit term. The source has continued to remain in compliance to this day.

The following emission rates are for reference purposes only and are not intended to be enforced by direct measurement unless otherwise noted in the Specific Conditions of this permit.

<b>Pollutant</b>	<b>Tons per Year</b>
Nitrogen Oxides (NO <sub>x</sub> )	1.9
Carbon Monoxide (CO)	1.6
Volatile Organic Compounds (VOC)	0.1
Particulate Matter (as PM <sub>10</sub> )	4.0
Sulfur Oxides (SO <sub>x</sub> )	<0.1
Hazardous Air Pollutants (HAPs combined)	<0.1

Potential to emit calculations for combustion of natural gas have been prepared using AP-42 emissions factors 1.4-1, 1.4-2, 1.4-3 and 1.4-4 (see emission documents).

**V. APPLICABLE REQUIREMENTS**

PDEQ views the operation of the furnaces at the facility similar to that of incinerators, and thus are subject to the operational hour limitation between the times of official sunrise to sunset PCC 17.16.170.A.

The facility is also subject to the opacity limiting standard of Pima County Code (PCC) 17.16.170.B and the particulate matter limiting standard of PCC 17.16.170.C.1; although as identified above, the source is not required to perform a performance test at this time to demonstrate compliance with the applicable emissions limitation.

There are no NSPS or NESHAP regulations that apply to the source.

HVF West Precious Metals LLC is required to operate and maintain the facility according to the HVF West Precious Metals LLC, December 13, 2012, Operations and Maintenance Plan.

**VI. PERMIT CONTENTS**

Specific Condition	Discussion	Authority
I	Permit Applicability – The source operates numerous furnaces that may cause or contribute to air pollution. PDEQ consider the operation of the furnaces as ‘fuel burning equipment’, in which combustion takes place. The combustion of the material in the furnaces effectively reduces the volume of the material for salvage purposes. This operation is similar to that of incinerators and thus PDEQ has determined that the units are subject to the particulate matter emission limitation pursuant to PCC 17.16.170.	PCC 17.12.140.B.3.c
II.A.1	Prohibition from emitting particulate matter exceeding 0.08 grains per cubic foot, based on dry flue gas at standard conditions, corrected to 12 percent carbon dioxide, except for not more than 30 seconds in any 60 minute period.	PCC 17.16.170.C.1 & PCC 17.16.170.E.1
II.A.2	Prohibition from emitting smoke from the furnace(s) in excess of 20% opacity; for not more than 30 seconds in any 60 minute period.	PCC 17.16.170.B & PCC 17.12.170.E.1
II.A.3	Operational hour limitation for all furnaces. This specific condition prevents the source operating the furnaces during conditions that may prove difficult to verify compliance with the opacity standard. The chosen method to demonstrate compliance with the opacity standard is by conducting opacity checks. These checks can only be performed relatively accurately during daylight hours.	PCC 17.16.170.A
II.B	General requirements provided to ensure the Permittee operates and maintains any applicable emission unit in a manner consistent with safety and good air pollution control practices for minimizing emissions.	PCC 17.12.185.A.2
II.C.1	General requirement provided to ensure the Permittee prevents the potential impact of visible emissions, including fugitive dust beyond the property boundary.	PCC 17.16.050.D
II.C.2	General opacity standard applicable to all permitted and non-permitted sources operating in Pima County	PCC 17.16.050.B
II.C.3	General fuel burning limitation. Each type of fuel burned in equipment powered by combustion has a unique blend of constituents. When burned, each fuel results in the release of regulated pollutants to the atmosphere at characteristic levels. This permit is written to account for only the fuels specified in Attachment 2 of the permit. Use of fuels other than those specified would result in different rates of pollutant emission. Therefore, the Permittee must only burn the designated fuels found in Attachment 2 of the permit to remain in compliance with the conditions of this permit.	PCC 17.12.185.A.2

**A. Additional Permit Conditions**

These general applicable standards contain standard language which is by no means specific but broadly applicable and required to be included in each permit by Title 17 of the Pima County Code 17.12.185.

**B. Alternate Operating Scenarios:**

The applicant has not requested any alternate operating scenarios.

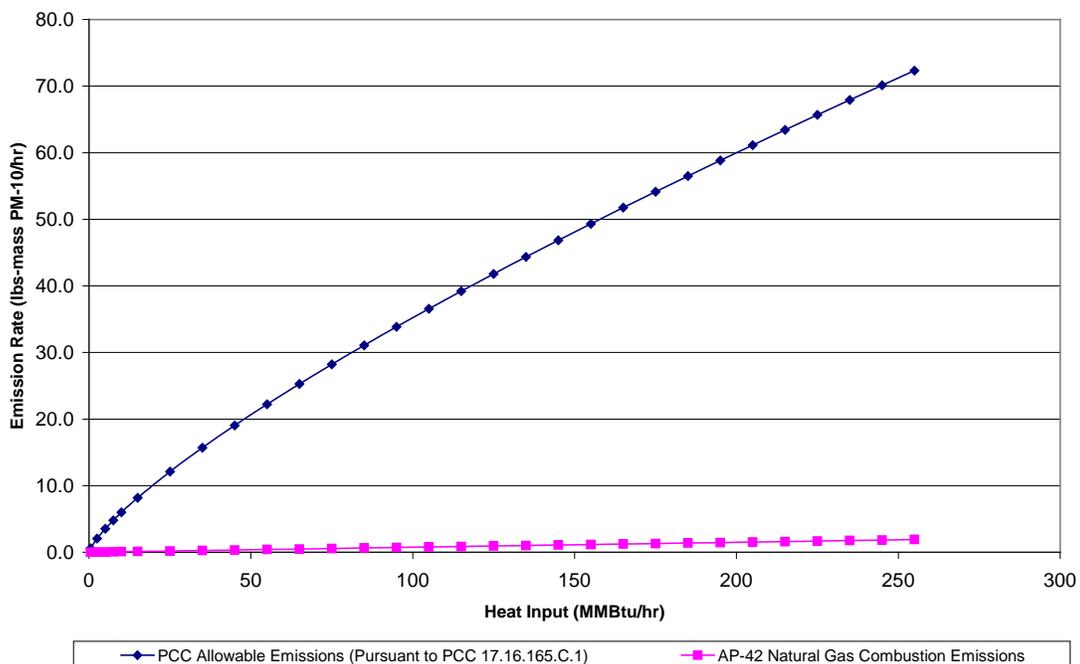
**C. Miscellaneous Comments:**

- The operation of the Filter Press reduces the formation of sludge within the Square Smelter scrubber thus enabling the operational efficiency of the scrubber to be maintained at design operating conditions. PDEQ does not consider the operation of the filter device as an air pollution control device for the following reasons: 1) the emissions from the unit are negligible and not quantifiable; 2) the emissions from the Square Smelter Scrubber system shall be measured at the exhaust exit (AFF Baghouse).
- PCC 17.16.165.C.1 limits the emissions of particulate matter from a fuel burning operation. This rule has not been included in the permit as allowable emissions are well above potential emissions. The Chart below illustrates the fact:

AP-42 estimated emissions are demonstrably significantly less than the allowable emissions (at 255 MMBtu/hr input capacity, the allowable emissions rate is 72.3 lb/hr while AP-42 estimates 1.90 lb/hr). Therefore, it is not necessary to include the standard in the permit explicitly but, by reference in Attachment 1.

- Monitoring and recordkeeping for odors at the facility to determine compliance with the Odor Limiting Standard pursuant to PCC 17.16.030 is not normally necessary because the use of good modern practices prevents the emissions of odors beyond the property boundary. The Control Officer may require the Permittee to test for odor emissions if the Control Officer has reasonable cause to believe a violation of a standard has been committed.

**Comparison of Emissions of PM-10 from the Combustion of Fuel  
PCC Allowable vs AP-42 Estimated**



**VII. IMPACTS TO AMBIENT AIR QUALITY**

Not a major source thus no studies are required.

**VIII. CONTROL TECHNOLOGY DETERMINATION**

No control technologies needed to be determined; source is not subject to BACT or LAER. This is a metal recycling facility operating as a Class III, True Minor Stationary Source.

**IX. PREVIOUS PERMIT CONDITIONS**

Not applicable, as no previous permit conditions were developed as part of an installation or pre construction review permit.

