APPENDIX C

SAMPLING AND ANALYSIS PLAN

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WATER QUALITY MONITORING AND RESPONSE PROGRAM

TECHALLOY COMPANY FACILITY
PERRIS, CALIFORNIA

January 2008

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1.0 INTRODUCTION

The following Sampling and Analysis Plan (SAP) details the specific procedures to be followed during implementation of the Water Quality Monitoring and Response Program (WQMRP) for the Techalloy Company, Inc. (Techalloy) facility located in Perris, California. The objective of the SAP is to provide procedures to be used in the field to ensure reliability of monitoring and measurement data. The procedures outlined herein are based largely on the existing SAP and general industry standards for collection of field data.

The objective of the groundwater monitoring program is to provide data necessary for identifying changes in groundwater conditions (i.e., significant increasing or decreasing concentration or groundwater elevation trends) which would cause a need to re-evaluate the groundwater management strategy. At the Techalloy facility, sufficient data has been generated over the last 20 years to provide a good understanding of the type and extent of contaminants in the groundwater, and to evaluate trends in concentration data.

As detailed in the WQMRP, the environmental programs related to the closed ponds have been completed through the Corrective Measures Implementation program stage. The result of this work culminated in agreement by the U.S. EPA that no further remediation of the groundwater is necessary, and continued monitoring is an appropriate groundwater management strategy. On this basis, the WQMRP and SAP are in the Corrective Action Monitoring stage.

The monitoring program was previously exempt from vadose zone monitoring, surface water monitoring, and statistical evaluation by the DTSC. Vadose zone monitoring was deemed unnecessary because of the nature of the contaminants and the fact that the source area (the ponds) had been capped. Surface water monitoring was also deemed to be unnecessary due to the overall lack of significant surface water at the facility and the engineered cap over the source area, and therefore the lack of a pathway for impact to surface water. Statistical evaluation was deemed unnecessary since a release to groundwater from the regulated units had already been documented. For these reasons, this WQMRP and SAP also do not include provisions for vadose zone monitoring, surface water monitoring, and statistical evaluation.

Field activities and protocols covered under this SAP include:

- Pre-sampling activities.
- Well purging and sampling.
- Sample packaging, handling and shipping.
- Decontamination and waste handling.
- Field quality assurance/quality control (QA/QC) procedures.
- Laboratory requirements.
- Equipment calibration.

- Documentation.

This SAP supplements the WQMRP by detailing specific procedures for implementing the groundwater monitoring program outlined in the WQMRP. Details on the site background, environmental setting, regional and site geology and hydrogeology, and monitoring program description are provided in the WQMRP, and should be used in conjunction with this SAP to implement continued groundwater monitoring activities at the facility.

Semiannual sampling will be conducted in the first two full weeks in January and July (first and third quarters), providing the wells are accessible. Occasionally, heavy rains in January limits access to the wells since all of the off-site wells are in open dirt fields. In the event wells are inaccessible, sampling will be conducted as soon as the wells are reasonably accessible. Water level measurements will be collected in April and October.

2.0 PRE-SAMPLING ACTIVITES

Pre-sampling activities include those items that will be completed prior to purging and sampling of any well. These items include:

- Well-head inspection.
- Water level measurement.
- Total well depth measurement.

2.1 Well-Head Inspection

Well-head conditions (condition of well casing, well lock, markings, standing water at surface, condition of surface pad and annular seal) and any suggested maintenance will be recorded in a log-book or on pre-printed forms. Appendix C-1 includes suggested formats for a variety of forms that may be used to simplify inspection, monitoring, purging, and instrument calibration documentation.

The monitoring wells MW-4 and MW-7 used for water levels only were not originally constructed with an annular seal, so the well-casing is loose within the borehole. No action is planned for these wells. The condition of these and the majority of the other wells were part of a negotiation between Techalloy and the DTSC in 1992 when the DTSC assumed regulatory oversight of the project from the U.S. EPA. As part of the agreement, Techalloy implemented a well renovation program resulting in many wells being replaced, hence the "R" (replaced) designation on many of the wells. Wells MW-4 and MW-7 were allowed to remain as constructed since they were to be used for water level measurement only.

2.2 Water Level Measurement

Water levels measurements will be collected to provide data necessary for plotting flow direction, and for determining the volume of water in each well required for purging during sampling events. Depth to groundwater will be measured in all wells within the monitoring well network before purging any well. Water levels will be measured in the shortest possible time, and must be collected within less than 24 hours to be used for determining flow directions.

An electronic water level meter will be used to measure the depth to groundwater from a surveyed mark on the top of the well casing. The water level meter will be equipped with a graduated tape or lead with markings every 0.01 feet so that depth to groundwater can be measured to the nearest 0.01 foot directly. Before recording the depth to groundwater for each well, two consecutive readings will be obtained that are within 0.01 feet of each other. Depth to groundwater will be recorded in a log-book or on pre-printed forms. Appendix C-1 includes suggested format for a water level measurement form.

The depth to groundwater will be measured at the start of each semiannual event in January and July. These months historically correspond to some of the shallowest (January) and deepest (July) readings recorded each year. Water levels elevations will also be collected in April and October. Readings will be compared to the prior sampling event to help identify potentially anomalous readings.

Water level measurements will be sequenced from least impacted well to highest impacted well to minimize the chance of cross-contamination. Measuring will start at the upgradient wells, move next to the furthest downgradient wells, and move back towards the source area wells. The water level meter will be decontaminated between wells as outlined in Section 5.

All wells within the current monitoring well network were originally surveyed by a licensed professional land surveyor. Casing elevations from the survey are included in Appendix D of the WQMRP. Any new or replacement wells subsequently installed will need to be surveyed by a California registered civil engineer or licensed professional land surveyor, and tied to the same datum used in the original survey.

2.3 Total Well Depth Measurement

The total well depth will be monitored semiannually concurrent with measuring the depth to groundwater. The total well depth will be measured from a surveyed mark on the top of the well casing using the water level meter. Before recording the well depth, two consecutive readings will be obtained that are within 0.01 feet of each other. Well depth will be recorded in a log-book or on pre-printed forms. Appendix C-1 includes suggested format for a water level measurement and well depth form. Readings will be compared to the prior sampling event to help identify potentially anomalous readings.

3.0 WELL PURGING AND SAMPLING

Well purging and sampling will be conducted according to procedures described in this section. To the extent practical, wells will be purged and sampled from least impacted to most impacted starting with upgradient wells, next to the furthest downgradient wells, working back toward the facility with the wells immediately downgradient of the closed ponds last.

3.1 Well Purging

Each well will be purged of a volume of water prior to collecting groundwater samples using a submersible pump or hand bailer. Discharge water will directed through a water quality instrument for measuring field parameters and then to an appropriate container for waste management. A discussion of waste management procedures is provided in Section 5. Floating product is not a concern at this facility.

3.1.1 Calculation of Purge Volume

Prior to lowering the pump down the well, the volume of water contained in the casing and filter pack will be determined using the water level measurement collected during the sampling event. Porosity of the filter pack will be assumed to be 30% for calculation of the filter pack volume. Note for deeper wells that the length of the filter pack often does not extend the entire length of the water column since many of the deeper wells were installed with short screen zones at the bottom of the well. Appendix D of the WQMRP provides the well construction details needed to calculate the purge volume for each well including the length of the filter pack, casing diameter, and original borehole diameter.

The purge volume will be a minimum of three times (3X) the sum of the well casing volume and saturated filter pack volume, unless the well purges dry. Procedures for handling wells that purge dry are discussed in Section 3.1.3. The calculated purge volume will be recorded in a log-book or on pre-printed forms. Appendix C-1 includes suggested format for well purging forms. Calculated purge volumes will be compared to the prior sampling event to help identify potentially anomalous readings.

3.1.2 Well Purging

Since most wells at the site yield very poorly, the pump will be lowered to near the well bottom, usually within 0.5-1 feet from bottom, to maximize the amount of water that can be removed from the well. The depth of the pump intake will be recorded on the purge forms (Appendix C-1). The purge rate will be set at around 0.5 to 1 gallon/minute (gpm), but at a rate no higher than 1.5 gpm. Flow rate will be measured by timing flow into a calibrated bucket or drum, or using an in-line flow meter. A purge record will be maintained on the purge form including the pump start and stop time and flow rate (Appendix C-1).

During the course of the purge, field parameters will be measured to monitor for stabilization. Parameters will include temperature, pH, specific conductivity, and turbidity. Readings will be collected at a rate of at least one per each volume of calculated purge volume (minimum of three readings), except for wells that purge dry. Purging will be deemed complete when successive readings for temperature, pH, and specific conductivity are within 10%, but at no less than three times the calculated water volume (unless the well goes dry). The readings will be recorded on the purge form (Appendix C-1).

High turbidity values in many wells have been a persistent issue at this site, particularly immediately prior to a well going dry. For this reason and because VOCs are not a significant issue at the site, stabilization of turbidity will not be a determining factor in purge volumes. Field parameters will be compared to the prior sampling event to help identify potentially anomalous readings.

Currently, only one well (MW-3R) is equipped with a dedicated pump. All other wells will be purged and sampled using a portable submersible pump. The submersible pump will be decontaminated between wells as outlined in Section 5.

3.1.3 Purging of Wells that Pump Dry

As noted previously, many of the wells at the site pump dry at very low flow rates, particularly during the drier seasons when water levels are lowest. Wells that often purge dry include: MW-2R, -5R, -6R, -8B, -16R, -19R, and -21B.

Prior to initiating sampling, the field crew will check previous sampling records to determine whether a well is likely to purge dry. For wells prone to pumping dry, the same purging methods will apply, however, field parameters will be obtained more frequently to attempt to get at least three readings before the well pumps dry.

3.2 Well Sampling

Groundwater samples will be collected following completion of purging in accordance with the procedures outlined in this section. A list of the laboratory parameters, container types and sizes, methods of preservation, and holding times are provided in Table C-1.

3.2.1 Sampling Wells that Purge Completely

Groundwater samples will be collected immediately following completion of well purging for wells that pump the full three calculated volumes, but no longer than four hours after purging. Since VOC samples are no longer included in the analytical program, samples will be collected directly from the discharge hose consistent with the previous WQMRP and SAP program. Samples collected for metals analyses will be filtered in the field through either an in-line 0.45-micron disposable filter, or a filter unit equipped with

0.45-micron filter. The filter will be pre-washed with well water and the filtrate will be collected along with the purge water for disposal as detailed in Section 5. If a filter unit is used, all non-disposable material (tubing, container or other materials) will be decontaminated between samples as outlined in Section 5. The type, manufacturer and composition of filters will be recorded in the field log.

3.2.2 Sampling Wells that Purge Dry

As noted in Section 3.1.3, many wells pump dry at very low flow rates. For these wells, sampling will be conducted as soon as possible following completion of purging. For most of the wells, waiting 15-30 minutes after purging will allow for sufficient recharge to provide enough water for sampling. Sampling in this case will be completed similar to the fully-purged wells. The pump will remain turned off in the well, and the well will allow to recharge long enough so that the pump can be re-started and the containers filled.

In at least one well (MW-6R), recharge of up to several hours to as much as 24 hours is needed to provide sufficient water to sample, particularly in the dry season when water levels are the lowest. If possible, this well will be purged in the morning, and checked periodically during the day to see if enough recharge has occurred for sampling. If the water column does not recharge sufficiently to pump, the well will be sampled using a bailer. In this case, a filtering unit will be needed since it will not be possible to use an in-line filter. If sufficient recharge has not occurred within 24 hours for filling all required sample containers, the well will be deemed not available for sampling for that particular event. Partial samples will be submitted if any containers were successfully filled. The metals container will be filled first followed by general minerals.

3.2.3 Sample Collection

For those samples that require preservation, the bottles will be provided pre-preserved by the laboratory, or preserved by the field crew. To ensure that samples have been preserved to the required pH, a small amount of the sample will be tested with pH paper. The pH paper will not be dipped into the container. Additional preservative will be added if the sample is not at the required pH, or a new sample will be collected and tested. Containers with preservatives will not be over-filled.

Sample labels will be affixed to each bottle describing, at a minimum, the sample identification number, name or initials of sample collector, date and time of collection, site location, requested analysis, and preservatives used. An example of a typical sample label is provided in Figure C-1. Each sample will have a unique identification number. Additional discussion of the sample numbering is provided in Section 6.

4.0 SAMPLE PACKAGING, HANDLING AND SHIPPING

Sample containers will be placed into sealable plastic bags and stored in a cooler on ice pending shipment to the laboratory. Strict chain-of-custody procedures will be used to ensure the samples are not tampered with. Coolers will be in possession of the field crew or in a secure, locked location until transfer to a shipper, courier, or laboratory representative.

A chain-of-custody form will be included within each cooler documenting the contents of the cooler. An example of a standard chain-of-custody form is included in Appendix C-1. At a minimum, the form will identify the project and sampler(s), and include necessary sample information such as sample identification, sample date and time, sample volume and number of containers, preservative, and analyses requested. Relinquish and acceptance signatures will be entered onto the chain-of-custody form whenever the custody of the samples changes hands.

For transport, sufficient ice will be included to maintain the cooler at the required temperature. A temperature blank will be included in each cooler so that the cooler temperature can be recorded at the laboratory. Adequate packing will be included to avoid breakage during transport. Provisions will be established so that samples are received by the laboratory in time to meet holding times.

5.0 DECONTAMINATION AND WASTE HANDLING

The following decontamination and waste handling procedures will be implemented to avoid cross-contamination of samples, and to avoid spreading of contamination by improper waste handling techniques. Field personnel will exercise caution to avoid cross-contamination. This includes sequencing the sampling so that wells are sampled from least to most impacted (where practical), and wearing disposable gloves when handling down-hole equipment. At a minimum, new gloves will be used at each well.

All down-hole equipment (pumps, tubing, power leads, water level meters, non-disposable bailers, etc.) will be decontaminated before lowering into the first well, between wells, and after final well sampling. Decontamination will consist of washing the exterior surfaces of the equipment with a non-phosphate detergent followed by a potable water rinse. Interior surfaces such as inside the pump, tubing and flow-through water quality instruments will be decontaminated by running a non-phosphate detergent wash through the equipment for at least two minutes, followed by at least two minutes of potable water rinse. The effectiveness of the decontamination process will be evaluated by collection of equipment blanks as outlined in Section 6.

All wastes will be containerized in appropriate containers for disposal. Currently, all purge water and rinse water is containerized in drums and transported to the Techalloy facility for disposal through their permitted wastewater treatment unit. The trash is disposed in dumpsters at the facility.

6.0 FIELD QUALITY ASSURANCE/QUALITY CONROL

The objective of the field quality assurance/quality control (QA/QC) program is to ensure the collection of representative, reproducible groundwater samples, and to assist in identifying erroneous results. The field QA/QC program incorporates a number of specific actions to meet the objective including:

- Well purging techniques outlined in Section 3.1 to ensure samples adequately represent groundwater conditions.
- Sample collection procedures outlined in Section 3.2 to ensure samples are collected in appropriate containers, and preserved and filtered as required by the analytical method.
- Sample packaging, handling and shipping procedures outlined in Section 4 to ensure samples are not tampered with and delivered to the laboratory appropriately chilled.
- Decontamination procedures outlined in Section 5 to prevent cross-contamination.
- Equipment calibration procedures outlined in Section 8 to ensure field equipment are working within acceptable ranges.
- Documentation requirements outlined in Section 9 to ensure field activities are adequately recorded.

In addition to the procedures listed above, the field QA/QC program will also incorporate the following:

- Sample identification procedures to ensure unique identification is assigned to each sample, and that blank samples are not identified to the laboratory.
- Additional procedures to avoid cross-contamination including sequencing well sampling from least impacted to most impacted,
- Collection of quality control samples to evaluate and document the effectiveness of the QA/QC program.

Specific requirements for these additional procedures are provided in the following subsections.

6.1 Sample Identification

Each sample will be assigned a unique identification that will not identify the well or identify the sample as a blank. An example identification which has been employed under the existing WQMRP is as follows:

- TA-0105-01 – Techalloy facility (TA), January 2005 (0105), sample 1 (01)
- TA-0705-12 – Techalloy facility (TA), July 2005 (0705), sample 12 (12).

The samples will be numbered in order of collection and could be a primary well sample, a duplicate sample, or a blank sample. The sample number will be recorded on the purge form, and a correlation table for the sample number and well number will be provided in the reports.

6.2 Avoidance of Cross-Contamination

Standard procedures to avoid cross-contamination include sequencing the sampling from the least to the most impacted wells, changing gloves between wells, and proper decontamination of equipment between wells. Decontamination procedures are discussed in Section 5. Equipment blank samples will be collected to evaluate the effectiveness of the decontamination procedures.

6.3 Quality Control Samples

Quality control samples (blanks) will be collected periodically to evaluate the effectiveness of the QA/QC program. The quality control samples will include the following:

- Field duplicate – frequency of 1 per 10 samples (10%)
- Equipment blank – frequency of 1 per day
- Temperature blank – frequency of 1 per cooler.

The objective of the field duplicate is to evaluate the precision of the sampling and analysis procedures. The field duplicate will be collected in the same manner and time as the primary sample. Duplicate samples will not be collected from the same wells each event, but will be collected preferentially from the higher impacted wells. Duplicate samples will be assigned sample numbers that do not identify the sample as a duplicate.

Equipment blanks will be collected to verify the effectiveness of the decontamination procedures. The sample will be collected after completion of a decontamination process by running distilled water through or over the cleaned equipment. Since most of the samples at the Techalloy facility are collected directly from the discharge hose, equipment blanks will be collected by running distilled water through the pump, tubing and flow-through water quality instrument. For wells that are sampled using a bailer, equipment blanks will be collected by filling the bailer with distilled water. Equipment blanks will be assigned sample numbers that do not identify the sample as a blank.

A temperature blank will be included in each sample cooler in order to record cooler temperature when received at the laboratory. The temperature blank will be identified as a temperature blank since this bottle will not be analyzed.

7.0 LABORATORY QUALITY ASSURANCE/QUALITY CONROL

All chemical analyses will be performed at a State-certified laboratory under QA/QC procedures required for their certification. Detection limits for analyses will be at or below respective Maximum Contaminant Levels (MCLs). For analytes with very low MCLs, the reporting of "J" values will be acceptable providing the detection limits are at least at or below the MCL.

8.0 EQUIPMENT CALIBRATION

The water quality instruments (temperature, pH, specific conductivity, and turbidity meters) will be calibrated daily per the manufacturer specifications. For some instruments such as the turbidity meter, calibration is conducted by the equipment supplier and daily calibration is essentially a check against a known value. Calibration will be recorded in a log-book or on pre-printed forms. Appendix C-1 includes suggested format for calibration forms.

During purging, readings will be compared to previous results to identify anomalous readings. Wide differences in readings may indicate the need for re-calibration of the equipment.

9.0 DOCUMENTATION AND REPORTING

Documentation will be maintained to adequately detail the activities completed in the field. Appendix C-1 provides example forms that can be used to maintain records for:

- Water level and total well depth measurements
- Well inspection
- Calibration
- Well purging
- Chain-of-custody.

These or similar forms will be used during the program to document field activities. In addition, a document stating that each member of the sampling team has read and understands the current version of the SAP will be signed by each member of the field team before each sampling event. The document will also note any deviations from the SAP after sampling is completed.

Accurate, unbiased, detailed, legible and understandable entries of all pertinent field observations and measurements will be recorded in ink in bound notebooks or on forms maintained in a binder.

Monitoring reports will be submitted as follows:

- January sampling results and April water level monitoring will be submitted in a single report by the end of May.
- July sampling results and October water level monitoring will be submitted in a single report by the end of November.
- The November report will be an annual report and will include historical results of the data-set to evaluate long-term trends.

The format for the reports will be similar to prior quarterly reports, and will include appropriate tables and figures to present the data.

10.0 HEALTH AND SAFETY

All work will be conducted in accordance with a Site Health and Safety Plan (HASP). The HASP will address the required elements covered under 40CFR1910.120 and 8CCR5192 including hazard identification, training requirements, and contingency planning among other items.

TABLE C-1

Sampling Requirements
Techalloy Facility
Perris, CA

Semiannual Monitoring Parameters					
Analyses	**Maximum Detection Limit**	**Laboratory Method**	**Minimum Bottle Volume and Type**	**Preservative**	**Holding Time**
Metals:					
Beryllium	0.004 mg/L	200.7	500ml poly	HNO3 to pH<2	6 months
Cadmium	0.005 mg/L				
Chromium	0.01 mg/L				
Cobalt	0.005 mg/L				
Copper	0.01 mg/L				
Lead	0.005 mg/L				
Manganese	0.01 mg/L				
Nickel	0.01 mg/L				
Zinc	0.01 mg/L				
Hexavalent chromium	0.001 mg/L	218.6	500ml poly	NA*	24 hours*
General Minerals:					
Chloride	10 mg/L	300.0	500ml poly	NA	28 days
Fluoride	0.05 mg/L	340.2			28 days
Nitrate-as-nitrogen	0.1 mg/L	300.0			48 hours
Sulfate	10 mg/L	300.0			28 days
Total dissolved solids	6.0 mg/L	160.1			28 days

* Hex chromium sample to be delivered unpreserved to laboratory within 24 hours. Laboratory may preserve to pH 9.3-9.7 to extend hold time to 28 days

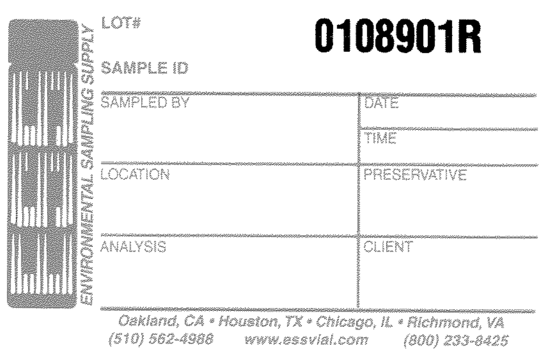
TABLE C-1 (continued)

Additional 3-Year Monitoring Parameters					
Analyses	**Maximum Detection Limit**	**Laboratory Method**	**Minimum Bottle Volume and Type**	**Preservative**	**Holding Time**
Metals:					
Antimony	0.006 mg/L	200.7	500ml poly*	HNO3 to pH<2	6 months
Arsenic	0.005 mg/L				
Barium	0.01 mg/L				
Boron	0.05 mg/L				
Molybdenum	0.01 mg/L				
Selenium	0.01 mg/L				
Silver	0.005 mg/L				
Thallium	0.002 mg/L				
Tin	0.02 mg/L				
Titanium	0.01 mg/L				
Vanadium	0.005 mg/L				
Mercury	0.001 mg/L	245.1			28 days
Other Analyses:					
Ammonia	0.1 mg/L	350.1	250ml poly or glass	H2SO4 to pH<2	28 days
Cyanide	0.01 mg/L	335.4	500ml poly or glass	NaOH to pH>12	14 days
Phosphate	0.02 mg/L	365.2	500ml poly or glass	NA	48hr

* Metals analysis can be combined with semiannual metals sample (does not require additional 500 ml bottle).

Figure C-1

Typical Sample Label


ENVIRONMENTAL SAMPLING SUPPLY

LOT# 0108901R

SAMPLE ID

SAMPLED BY	DATE TIME
LOCATION	PRESERVATIVE
ANALYSIS	CLIENT

Oakland, CA • Houston, TX • Chicago, IL • Richmond, VA
(510) 562-4988 www.essvial.com (800) 233-8425

APPENDIX C-1

EXAMPLE FIELD FORMS

TABLE 4-6 MONITORING WELL INSPECTION CHECKLIST	
MONITORING WELL COMPONENT	INSPECTION/ACTION
Lock	Check to see if there is a lock for each well either on the steel cover or on the PVC casing cap. Replace the lock if it is not in good working condition. ACTION: Date Action Completed:_____
Steel Cover	Inspect the steel cover for damage or lost screws or bolts. Replace the screws or bolts if needed. ACTION: Date Action Completed:_____
Casing Cap	Make sure there is a cap for the PVC pipe. If the casing cap is a locking cap, make sure it has a lock in good working condition. ACTION: Date Action Completed:_____
Concrete Apron	Inspect the concrete apron for looseness or gaps between the apron and ground surface. Repair the apron if it is broken or loose. ACTION: Date Action Completed:_____
Reference Point Marking	Check to see if the elevation reference point is clearly marked. Remark the point with an indelible black marker if not clearly visible. ACTION: Date Action Completed:_____
Monitoring Well Identification Number	Check the well I.D. number. If not visible, mark the I.D. number on the concrete apron or well casing with an indelible black marker. ACTION: Date Action Completed:_____
Annular Space Between PVC Casing and Well Box	Inspect the annular space between the PVC casing and the well box under the steel cover for any free-standing water. Remove the water. ACTION: Date Action Completed:_____
Depth to Bottom of Well	Depth:__________ ft.

COMMENTS:____

____

Signature of Inspector:________________________________ Date:__________

Water Level Measurement Form

Project: Techalloy

Location : Perris, CA

W.O. #:

WESTON Personnel: FM/AR

Weather Conditions:

Date: 4-Oct-04

Meter:

Comments:

Time	Well No.	Top of Casing (TOC) Elevation	Depth to Water Below TOC	Depth to Well Bottom Below TOC	Groundwater Elevation	Floating Product? Y/N	Floating Product Thickness

pH Meter Calibration Log

Project: ____

Location : ____

W.O. #: _______________-_________-_________-___________

Date	Temp. (C)	Standard	Actual	Meter No.	Operator	Comments

Turbidity Meter Calibration Log

Project: ____

Location : ____

W.O. #: _______________-_________-_________-____________

Date	Standard	Actual	Meter No.	Operator	Comments

Conductivity Meter Calibration Log

Project: __Techalloy____
Location : _Perris, CA____
W.O. #: ______________-________-________-___________

Date	Temp. (C)	Standard	Actual	Meter No.	Operator	Comments

Groundwater Well Purging/Sampling Form

Project: ______________________ Location : ________________ Date:__________
W.O. #: ____________-_________-_________-__________ Time:__________
Sampler(s):______

Well I.D. #: ____________ Well diameter: ___ 2" ___ 4" ___ 6"

Weather conditions: ________________________________

Observations/Comments: ________________________________

Total well depth: ________
Depth to water: ________
Water column: ________

2" well 0.17 gal/ft
4" well: 0.66 gal/ft
6" well 1.50 gal/ft

One well volume: ________
Three well volumes: ________

Casing Diameter	Boring Diameter	Gallons/Linear Ft. in Annulus
2"	7.25"	1.91
2"	8.25"	2.55
4"	8.25"	1.95
4"	10.25"	3.46

Purge Method:

___ Hand bail: disposable bailer Teflon bailer (circle one)
___ Submersible Pump (Grundfos Redi-Flo2, Johnson-Keck, Flint & Walling)
___ Other

Purge Rate:__________
Minutes to purge three well volumes:____________
Purge record:____

Actual minutes purged:________
Total volume purged: ________

Destination of purge water: ____

Field Parameters

	Time	Volume (gal.)	Temp. (C)	pH	Spec. Cond. (umho/cm)	Turbidity (NTU)	Comments
Sample							
Duplicate							

Sampling Device (Pump discharge hose, disposable bailer, Teflon bailer)

Sample Number:________________ Sample Time: ________ Analysis: ________
Field Duplicate ___ Yes ___ No Sample Time: ________ ________
Field Blank ___ Yes ___ No Sample Time: ________

Chain of Custody Record

STL-4124 (0901)

Client	Project Manager	Date	Chain of Custody Number 220254
Address	Telephone Number (Area Code)/Fax Number	Lab Number	Page ____ of ____

City	State	Zip Code	Site Contact	Lab Contact	Analysis (Attach list if more space is needed)
Project Name and Location (State)			Carrier/Waybill Number		
Contract/Purchase Order/Quote No.			Matrix	Containers & Preservatives	

Sample I.D. No. and Description (Containers for each sample may be combined on one line)	Date	Time	Air	Aqueous	Sed.	Soil		Unpres	H2SO4	HNO3	HCl	NaOH	ZnAc/ NaOH														Special Instructions/ Conditions of Receipt

Possible Hazard Identification

☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal

☐ Return To Client ☐ Disposal By Lab ☐ Archive For ____ Months (A fee may be assessed if samples are retained longer than 1 month)

Turn Around Time Required

☐ 24 Hours ☐ 48 Hours ☐ 7 Days ☐ 14 Days ☐ 21 Days ☐ Other____

QC Requirements (Specify)

1. Relinquished By	Date	Time	1. Received By	Date	Time
2. Relinquished By	Date	Time	2. Received By	Date	Time
3. Relinquished By	Date	Time	3. Received By	Date	Time

Comments

DISTRIBUTION: WHITE - Returned to Client with Report; CANARY - Stays with the Sample; PINK - Field Copy

APPENDIX D

WELL CONSTRUCTION DETAILS

Modified Monitoring Well Construction Details

Monitoring Well	Depth to Bottom (feet below ground surface)	Surface Conductor (feet below ground surface)	Borehole Diameter (inches)	Casing Diameter (inches)	Screened Interval (ft)	Filter Pack Interval (ft)	Grout Seal Interval (ft)	Casing Stickup (ft)	Elevation Top of Casing (ft. above MSL)	Depth to Groundwater Jan-96 (ft)	Groundwater Elevation Jan-96 (ft)
MW-1R	27	1	8	4	7-27	4.8-27	2.2-4.8	3	1427.98	13.43	1414.55
MW-2	65	31	4	2	0-65	none	open annulus	1	1428.30	NA	NA
MW-2R	27.5	none	7	2	17-27	14-30	0-14	3	1429.09	21.06	1408.03
MW-3R	34	none	10	4	18.5-33.5	14-34	0-12	1.5	1426.99	18.60	1408.39
MW-4	30	3	6	2	9.9-29.9	7.8-29.9	0-5.8	1	1434.38	16.99	1417.39
MW-5	29	none	8	2	14.2-29.2	11.9-29.9	0-11.9	NA	NA	NA	NA
MW-5R	35	none	6	2	15.1-35.1	10-35.1	0-10	-0.5	1430.34	21.05	1409.29
MW-6R	26	none	6	2	16-26	14-30	0-14	1	1426.72	19.82	1406.90
MW-7	55.5	4	4.5	2	15.5-55.5	10-35.1	open annulus	2	1436.94	20.65	1416.29
MW-8	37	3	4.5	2	12-37	none	open annulus	3	1426.82	NA	NA
MW-8B	71.5	none	7	2	61-71	56-72	0-56	3	1428.72	20.50	1408.22
MW-9	30	3	6	2	9.9-29.9	6.3-29.9	0-4.2	2	1426.14	14.82	1411.32
MW-10	35	13	4	2	14.4-34.7	none	open annulus	1.5	1425.10	NA	NA
MW-10R	29.5	none	7	2	19-29	16-30	0-16	1	1424.12	16.98	1407.14
MW-11	35.5	9.5	4	no casing	no casing	none	open hole	-1	1421.64	NA	NA
MW-12	33	10	4	no casing	no casing	none	open hole	-0.5	1421.38	NA	NA
MW-13	35.5	9.6	4	no casing	no casing	none	open hole	-0.5	1419.08	NA	NA
MW-13R	27.5	none	7	2	15-25	12-26	0-12	-0.5	1419.86	14.32	1405.54
MW-14A	34	8.3	4	no casing	no casing	none	open hole	-0.5	1417.78	NA	NA
MW-14AR	23	none	7	2	12-22	10-24	0-10	-0.5	1418.06	13.09	1404.97
MW-14B	53	none	6	2	43-53	40-53	0-40	-0.5	1418.02	13.03	1404.99
MW-15	38	7.2	4	no casing	no casing	none	open hole	-0.5	1423.46	14.02	1409.44
MW-16R	24	11.8	4	2	13.5-23.5	8.5-25	0-8.5	-0.5	1420.62	15.00	1405.62
MW-17	33	10	4	no casing	no casing	none	open hole	-1	1414.86	NA	NA
MW-18R	20	12.2	4	2	9-19	7-20	0-7	-0.5	1414.61	12.86	1401.75
MW-19	30	5	8	2	9.5-30	5-30	0-5	-0.5	1414.27	NA	NA
MW-19R	20	none	8	2	9-19	7-22	0-7	2	1414.40	15.53	1398.87
MW-20	18	3.5	8	2	7-17.5	3.5-17.5	0-3.5	-0.5	1405.00	NA	NA
MW-20R	17	none	8	2	9-19	7-21	0-7	-0.5	1410.13	11.03	1399.10
MW-21A	35.3	none	6	2	25.3-35.3	22-35.3	0-22	-0.5	1437.48	17.28	1420.20
MW-21B	53.5	none	8	2	43.5-53.5	40-53.5	0-40	-0.5	1437.62	17.33	1420.29
MW-22	29.2	none	6	2	16-26	14-29.2	0-14	-0.5	1419.50	16.98	1402.52
MW-23	27.6	none	6	2	14-24	12-27.6	0-12	-0.5	1413.78	13.23	1400.55
MW-24	27.5	none	6	2	11-21	9-27.5	0-9	-0.5	1415.60	14.52	1401.08
MW-25A	25.1	none	6	2	11-21	9-25.1	0-9	-0.5	1412.72	12.77	1399.95
MW-25B	46.5	none	6	2	35.5-45.5	30-46.5	0-30	-0.5	1412.64	12.64	1400.00

NA - Not Applicable