

OVERVIEW

WASTEWATER TREATMENT
SYSTEM RETROFIT

Interstate Nuclear Services
Santa Fe, New Mexico

by

Patterson Associates, Inc.
Chicago, Illinois

December 2, 1996

WASTEWATER TREATMENT SYSTEM RETROFIT
Interstate Nuclear Services
Santa Fe, New Mexico

1. Overview

The Interstate Nuclear Services (INS) Santa Fe plant is an industrial laundry facility, servicing low-level radioactive garments. The facility has the capacity to wash 1,275 lbs of garments per hour, with a potential maximum instantaneous wastewater flowrate of 60 gpm. The daily maximum discharge is 25,000 gpd. Suspended solids, including those associated with low-level radioactivity, are a principal focus in the wastewater treatment system (WWTS) retrofit design and operation at the INS Santa Fe plant. The existing WWTS, and the two phase (interim and final) retrofit are depicted in attached Phase I and Phase II Schematics, and the Process and Instrumentation Diagrams (P&IDs).

The original WWTS consisted of two wastewater collection sumps, a screen shaker for solids (lint) removal, and three wastewater effluent hold-up tanks (in parallel connection). One of these effluent tanks was recently decommissioned. The retrofitted WWTS will utilize the existing wastewater collection sumps and screen shaker. The remaining two effluent hold-up tanks will be modified to serve as wastewater equalization tanks. In addition, a pressure filtration system will be added onto the WWTS for final suspended solids removal, prior to wastewater discharge to the City sewer.

During WWTS Retrofit System Phase I (interim) operation (see WWTS Schematic - Phase I), the backwash water from this filtration system will be processed by the existing screen shaker, with polymer addition for solids flocculation. During Retrofit Phase II (Final System) operation, the flocculated backwash water will be directed to a sludge thickener, filter press and sludge dryer.

Section 2 describes the wastewater sumps and screen shaker operations for the interim and final systems. Section 3 describes the wastewater equalization tanks operation mode. Section 4 discusses the pressure filtration system. Filter backwash water handling and Phase II solids handling components are presented in Sections 5 and 6, respectively.

2. Wastewater Collection Sumps T-101 & T-102, and Screen Shaker S-101 plus Transfer Tank T-103 (See P&ID-02)

Existing wastewater collection sump T-102 has a working volume of 160 gallons, and receives wastewater discharged from the 200 lb laundry washer, and emergency overflow from existing T-103 plus the drainage from the existing wet lint container (both discussed below). When the liquid level in T-102 reaches the set high level, submersible pump P-102 is automatically turned on to transfer the wastewater from sump T-102 to an existing trench, where the wastewater flows to existing sump T-101 via gravity. When the liquid level in sump T-102 drops to the set low level, pump P-102

automatically shuts off. Thus, T-102 sequentially fills, and is automatically pumped down.

Sump T-101, the main wastewater collection sump, has a working volume of 1,600 gallons, and receives wastewater from the two 400 lbs laundry washers, the 275 lbs washer, and from sump T-102. Two centrifugal pumps, P-101A/B, will service sump T-101. These two pumps will operate in alternating mode, one operating, while the other one is in standby. When the liquid level in sump T-101 rises to the set high level (50% of the sump holding capacity), one of pumps P-101A/B will turn on automatically, and pump the wastewater to existing screen shaker S-101. If the liquid level continues rising to the set high-high level (75% of the sump holding capacity), the panel high level alarm will trigger to alert the WWTP operator of the condition. The operator will manually turn on the second pump, to prevent the sump from overflowing. When the level drops to the set low level (6" above the pump suction), the pump(s) will automatically shut off.

The existing screen shaker S-101 has a 4' diameter stainless steel screen, with 44 μ m pore size. The screened wastewater is directed to transfer tank T-103, thence pumped to wastewater equalization tanks T-104A/B, via pump P-103. Pump P-103 turns on automatically when the liquid level is at 60% of tank T-103 holding capacity, and turns off at a level 6" above the pump suction line. Panel high level and low level alarms are

triggered at the emergency overflow level and below the pump shut-off level, respectively, to alert the operator to the extreme level condition. The emergency overflow from tank T-103 is piped to a floor trench, where the wastewater flows, via gravity, to sump T-102.

The solids captured on the screen shaker are directed to a strainer sock, via an 8" diameter flexible hose. The sock is located in the wet lint container. The free liquid in the sock drains into the container and then to the floor trench, where it flows, via gravity, to sump T-102. The lint retained in the sock, together with the sock itself will be packaged and disposed off-site during Phase I operation, and directed to the sludge dryer D-101 during Phase II operation.

Solids settled in sumps T-101 and T-102, and in transfer tank T-103, if there are any, will be manually removed during the scheduled plant maintenance. These solids will be packaged for off-site disposal during Phase I operation, and directed to sludge dryer D-101 during Phase II operation.

3. Equalization Tanks T-104A/B (See P&ID-03)

The two parallel connected equalization tanks T-104A/B are horizontal tanks, each with a working volume of 8,000 gallons. The wastewater (via pump P-103) is directed from T-103 into the tanks from the bottom, so that the liquid levels in both

tanks are equalized. Mixing in tanks T-104A/B will be achieved via four mixing eductors in each tank, and a common recirculation pump P-104. Pump P-104 withdraws water from the bottoms of the two tanks and recirculates back to the tanks via eductors. Two flowmeters FI-104A/B will be installed on the return lines, one for each tank, to balance the return flowrate. The eductors and pump P-104 are sized such that the tank turnover time is about 11 minutes when a tank is full, and 6 minutes when a tank is half full.

Tanks T-104A/B will be equipped with a dual discharge pump system P-201A/B (the pressure filter feed pumps). One pump is in operation while the other is on standby. Both recirculation pump P-104 and filter feed pumps P-201A/B shut off automatically when the liquid level drops to 6" above the T-104 upper eductor nozzles.

Tanks T-104A/B will be operated in a continuous mode. The target level in the tanks will normally remain between 50% to 60% of the tank capacity, via level control valve LV-104. High level and low level panel alarms will be triggered when the liquid level reaches 80% of the tank capacity or drops to the pump shut-off level, respectively. The two tanks will thus be operated to retain an excess surge capacity of 3,000 gallons, to allow troubleshooting time without shutting down production.

4. Filtration System F-201A/B/C/D and Backwash Feed Tank T-105
(see P&ID-03 and P&ID-04)

The wastewater filtration system consists of four mixed media pressure filters (F-201 A/B/C/D), and filter backwash water holding tank T-105. The four filters are a packaged unit, which has its own control panel. The filter manufacturer has reported that the filter media can remove portions of suspended solids with a size down to 1 μ m. During normal operation, the filters are operated in parallel. Each filter has a working capacity of 25 gpm, with a combined maximum working capacity of 100 gpm for the pressure filtration system. The total flow to the filters is always maintained at 100 gpm, and is evenly split to the four filters. Variation in the influent flowrate to the pressure filtration system is compensated via internal recirculation pump P-202 and a flow control valve on the return line.

9/25/95
SDD
SDD
SDD

The filter backwash cycle will be initiated when the influent pressure increases to the setpoint. The filters are backwashed in sequence. While one filter is undergoing backwash, the other three remain in the normal operation cycle. Each filter will take approximately 5 minutes for backwash (with a backwash flowrate of 35 gpm), and 1 minute for rinsing at a flowrate of 40 gpm. It will take 25 to 30 minutes to complete the entire backwash cycle, and generate approximately 1,000 gallons of backwash water to be further handled (see Section 5, below).

The initial aliquot of filtered wastewater after a backwash operation is directed to the backwash water holding tank T-105 during the beginning of the filtration cycle, as clean water for subsequent filter backwash. When the liquid level in tank T-105 reaches high level (75% of the holding capacity), solenoid valves FV-105A and FV-105B reverse position to allow the filtered wastewater to begin discharge through the effluent flow monitoring and sampling station S-102, thence to the City sewer system. The high level panel alarm and low level panel alarm for T-105 will be triggered when the liquid level in the tank increases to 90% of the tank capacity or drops to the pump shut-off level, respectively. Pump P-105 will be automatically activated when the filter backwash cycle is triggered.

5. Filter Backwash Water Handling System T-106, T-107 & MX-107, and Phase I Operation (see P&ID-04)

The filter backwash water handling system includes a polymer addition system T-107, static in-line mixer MX-107 and a flocculation tank T-107. The backwash from the filtration system is piped to flocculation tank T-106. Polymer is added into the line and mixed with the filter backwash water in the static mixer prior to tank T-106.

Tank T-106 has a working volume of 450 gallons and is equipped with an agitator MX-106. For a maximum backwash flowrate of

40 gpm, tank T-106 will provide a hydraulic residence time of 11 minutes, which will allow solids to flocculate. Energy required for flocculation is provided via the agitator MX-106. During Phase I operation, tank T-106 is located near the screen shaker. The flocculated backwash water will overflow from tank T-106 to screen shaker S-101 for solids removal. Tank T-106 is also equipped with a low level alarm and low level agitator shut-off switch, as a safe guard for the agitator.

6. Phase II Solids Handling Components (See P&ID-05)

Phase II solids handling components include a sludge thickener T-108, a filter press F-202, a sludge dryer D-101, an air pollution control device for the sludge dryer off-gas, and a wastewater transfer tank T-109. In Phase II operation, the flocculated backwash water from T-106 is transferred into sludge thickener T-108. Tank T-108 has a working volume of 3,750 gallons and four sample taps at different levels on the side wall, 1.5 ft apart. These taps are to monitor settled sludge blanket level. Tank T-108 can hold more than three batches of filter backwash water, which will allow at least one day hydraulic residence time (HRT) in tank T-108. The overflow line will decant the supernatant without disturbing the settled sludge. When the sludge in tank T-108 accumulates to a specified level, the operator will manually turn on pump P-108 to pump the thickened sludge to filter press F-202.

Tanks T-108 and T-109 share one pump, P-108, and the operator will manually change valves and the switch for the pump to function on level control in T-109, subsequent to pumping thickened sludge, so that the pump operation will be controlled by the liquid level in tank T-109.

Filter press F-202, sludge dryer D-101 and the dryer air pollution control device are a packaged unit. The filtrate is discharged to wastewater transfer tank T-109. At the end of the filter press operation cycle, the filter cake is dropped into sludge dryer D-101, from which the dried sludge is packaged for off-site disposal. The exhaust from the sludge dryer is directed to an air pollution control device prior to release to the atmosphere.

Tank T-109 receives supernatant from sludge thickener T-108 and the filtrate from filter press F-202. The wastewater accumulated in T-109 is pumped to T-104 A/B, via pump P-108. During normal operation, T-109 needs to be emptied much more frequently than transferring sludge from T-108 to F-202. Therefore, the manual switch for pump level control should normally be at the T-109 position. Pump P-108 will turn on automatically when the level in T-109 is 50% of the tank holding capacity and will shut off when the level drops to 6" above the pump suction line.

SCIENTIFIC LABORATORY DIVISION

P.O. Box 4700
Albuquerque, NM 87196-4700700 Camino de Salud, NE
[505]-841-2500

RADIOCHEMISTRY SECTION [505]-841-2574

March 31, 1995

Request
ID No. 108884ANALYTICAL REPORT
SLD Accession No. RC-95-0175Distribution☐ User 55814
☒ Submitter 514
☒ SLD FilesTo: Margaret Lopez
NM Environment Department
Haz. & Rad. Materials Bureau
P.O. Box 26110
Santa Fe, NM 87502From: Radiochemistry Section
Scientific Laboratory Div.
700 Camino de Salud, N.E.
P.O. Box 4700
Albuquerque, NM 87196-4700

RECEIVED

APR 04 1995

Re: A sludge sample submitted to this laboratory on March 17, 1995

DEMOGRAPHIC DATA

COLLECTION		LOCATION
On: 16-Mar-95	By: LOP	Injection Well
At: 13:15 hrs.	In/Near: Santa Fe	

ANALYTICAL RESULTS

Analysis	Value	Sigma	D. Lmt.	Units	Analyst
< G-Alpha w/ Am-241 ref.	800.00	150.00	70.00	pCi/L	Monroe
G-Alpha w/ U -nat ref.	1200.00	170.00	110.00	pCi/L	Monroe
< G-Beta w/ Cs-137 ref.	3700.00	300.00	100.00	pCi/L	Monroe
G-Beta w/ Sr/Y90 ref.	3250.00	250.00	90.00	pCi/L	Monroe
< Pu-239, Alpha Spec.	-0.04	0.21		pCi/L	Ewing
< Pu-238, Alpha Spec.	-0.18	0.17		pCi/L	Ewing

Notations & Comments:

Uncertainties, sigmas, are expressed as +- one standard deviation, i.e. one standard error.

Small negative or positive values which are less than two(2) standard deviations should be interpreted as: including 'zero'; as 'not detected'; as 'less than the detection limit (<D. Lmt.)' when reported; or 'less than twice the standard deviation'.

Laboratory Remarks:

Sample received was a near black slurry of sludge. Although it contained a great deal of sludge, it was pourable like a water. It had not been acidified and is being retained unacidified.

When viewed for 2.5 hours by gamma spectroscopy, the presence of I-131 was readily apparent. The conditions were very ad-hoc, and as of now, 20-Mar, just a ball-park estimate of on the order of one to a few nCi/L of I-131 are present.

Gross alpha/beta analysis was performed 17-Mar-95 thru 20-Mar-95. The sample matrix (a slurry of sludge) forced the use of a very small aliquote, 2 mL providing 84. mG, (while the other 'waters' allowed 40 to 50 mL to be used) for the gross alpha/beta analysis in order to stay under 100 mG/planchet. This small volume, and working with a

(Continued on page 2.)

slurry, undoubtedly introduces reproducibility, etc. problems --
this is a gross analysis.

Gamma Spectroscopy Results: w/ NON-STANDARD Geometry !

=====

Twenty one gamma peaks were 'detected', greater than system background from 40 keV to 1600 keV for a 0.6 liter sample of the supplied water counted 22-Mar-95 at 08:35 for 60,000 sec (about 17 Hr) and evaluated at the 95% peak confidence level with Canberra's Spectran-F (V4.1). An LLD calculation at selected energies was performed for the collected spectrum as of the date & time of counting producing:

Energy, keV	LLD, gps/L	Energy, keV	LLD, gps/L
-----	-----	-----	-----
100.0	< 0.3	700.0	< 0.8
150.0	< 0.4	800.0	< 0.8
200.0	< 0.4	1000.0	< 0.8
300.0	< 0.4	1200.0	< 0.8
400.0	< 0.4	1400.0	< 0.8
500.0	< 0.4	1600.0	< 0.8
600.0	< 0.8		

Where an estimated over efficiency of a factor of four has been applied to the collected data.

A closer inspection of the software 'detected' peaks revealed six were very weak, unreliable (>25% 1 sigma uncertainty in net area), and likely are artificial 'detects';

Therefore:

Fifteen gamma peaks were reliably observed.

Of these fifteen peaks, nine are readily assignable to I-131; with the remaining six peaks attributable to an estimate <20pCi/L of naturals (i.e. Th-234, Ra-226/U-235, Pb-214, and Ac-228) and an estimate 100 pCi/L of K-40.

Using the three major I-131 peaks, and attempting to account for the geometry distortion, the I-131 is guesstimated as be in the ballpark of 2. nanoCi/L.

On March 23 the sample was acidified to pH < 2 with nitric acid and allowed to stand a minimum of 24 hours pending further analysis.

Plutonium analysis was performed 24-Mar-95 thru 31-Mar-95.

Reviewed By: Loren A. Berge
Loren A. Berge, Ph.D. 03/31/95
Supervisor, Radiochemistry Section

SCIENTIFIC LABORATORY DIVISION

P.O. Box 4700
Albuquerque, NM 87196-4700700 Camino de Salud, NE
[505]-841-2500

RADIOCHEMISTRY SECTION [505]-841-2574

March 31, 1995

Request
ID No. 108884ANALYTICAL REPORT
SLD Accession No. RC-95-0175

Distribution

☐ User 55814
☒ Submitter 514
☒ SLD FilesTo: Margaret Lopez
NM Environment Department
Haz. & Rad. Materials Bureau
P.O. Box 26110
Santa Fe, NM 87502From: Radiochemistry Section
Scientific Laboratory Div.
700 Camino de Salud, N.E.
P.O. Box 4700
Albuquerque, NM 87196-4700RECEIVED
APR 04 1995

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On: 16-Mar-95	By: LOP . . .	Injection Well
At: 13:15 hrs.	In/Near: Santa Fe	

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Laboratory Remarks:

Sample received was a near black slurry of sludge. Although it contained a great deal of sludge, it was pourable like a water. It had not been acidified and is being retained unacidified.

When viewed for 2.5 hours by gamma spectroscopy, the presence of I-131 was readily apparent. The conditions were very ad-hoc, and as of now, 20-Mar, just a ball-park estimate of on the order of one to a few nCi/L of I-131 are present.

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(Continued on page 2.)

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500.0	< 0.4	1600.0	< 0.8
600.0	< 0.8		

Where an estimated over efficiency of a factor of four has been applied to the collected data.

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Using the three major I-131 peaks, and attempting to account for the geometry distortion, the I-131 is guesstimated as be in the ballpark of 2. nanoCi/L.

On March 23 the sample was acidified to pH < 2 with nitric acid and allowed to stand a minimum of 24 hours pending further analysis.

Plutonium analysis was performed 24-Mar-95 thru 31-Mar-95.

Reviewed By: Loren A. Berge
Loren A. Berge, Ph.D. 03/31/95
Supervisor, Radiochemistry Section

SCIENTIFIC LABORATORY DIVISION

P.O. Box 4700
Albuquerque, NM 87196-4700700 Camino de Salud, NE
[505]-841-2500

RADIOCHEMISTRY SECTION [505]-841-2574

March 31, 1995

Request
ID No. 108883ANALYTICAL REPORT
SLD Accession No. RC-95-0172Distribution☐ User 55814
☒ Submitter 514
☒ SLD FilesRECEIVED
APR 04 1995To: Margaret Lopez
NM Environment Department
Haz. & Rad. Materials Bureau
P.O. Box 26110
Santa Fe, NM 87502From: Radiochemistry Section
Scientific Laboratory Div.
700 Camino de Salud, N.E.
P.O. Box 4700
Albuquerque, NM 87196-4700

Re: A water sample submitted to this laboratory on March 17, 1995

DEMOGRAPHIC DATA

COLLECTION		LOCATION
On: 16-Mar-95	By: LOP	Water Reuse Wet Well
At: 13:00 hrs.	In/Near: Santa Fe	

ANALYTICAL RESULTS

Analysis	Value	Sigma	D. Lmt.	Units	Analyst
G-Alpha w/ Am-241 <u>ref.</u>	4.60 $\times 10^{-9}$	1.30	1.90	pCi/L $\mu\text{Ci}/\text{ml}$	Monroe
G-Alpha w/ U -nat <u>ref.</u>	5.10 $\times 10^{-9}$	1.40	2.10	pCi/L "	Monroe
G-Beta w/ Cs-137 <u>ref.</u>	15.10 $\times 10^{-9}$	2.30	3.40	pCi/L "	Monroe
G-Beta w/ Sr/Y90 <u>ref.</u>	14.40 $\times 10^{-9}$	2.10	3.30	pCi/L "	Monroe
Pu-239, Alpha Spec.	-0.02 $\times 10^{-9}$	0.01		pCi/L "	Ewing
Pu-238, Alpha Spec.	-0.02 $\times 10^{-9}$	0.01		pCi/L "	Ewing

Notations & Comments:

Uncertainties, sigmas, are expressed as +- one standard deviation, i.e. one standard error.

Small negative or positive values which are less than two(2) standard deviations should be interpreted as: including 'zero'; as 'not detected'; as 'less than the detection limit (<D. Lmt.)' when reported; or 'less than twice the standard deviation'.

Laboratory Remarks:

Sample received was a slightly yellow-gray toned 'water' with minimal sediment. It had not been acidified and is being retained unacidified.

Gross alpha/beta analysis was performed 17-Mar-95 thru 20-Mar-95.

Gamma Spectroscopy Results:

=====

Six gamma peaks were 'detected', greater than system background from 40 keV to 1600 keV for a 1 liter sample of the supplied water counted 18-Mar-95 at 11:50 for 60,000 sec (about 17 Hr) and evaluated at the 95% peak confidence level with Canberra's Spectran-F (V4.1). An LLD calculation at selected energies was performed for the collected spectrum as of the date & time of counting producing:

Energy, keV	LLD, gps/L	Energy, keV	LLD, gps/L
-------------	------------	-------------	------------

(Continued on page 2.)

ANALYTICAL REPORT
SLD Accession No. RC-95-0172
Continuation, Page 2 of 2

100.0	< 0.07	700.0	< 0.2
150.0	< 0.08	800.0	< 0.2
200.0	< 0.1	1000.0	< 0.2
300.0	< 0.1	1200.0	< 0.2
400.0	< 0.1	1400.0	< 0.2
500.0	< 0.1	1600.0	< 0.2
600.0	< 0.2		

A closer inspection of the software 'detected' peaks revealed five were very weak, unreliable ($>25\%$ 1 sigma uncertainty in net area), and likely are artificial 'detects';
Therefore:

One gamma peak was reliably observed.
This peak was at at 364.4 keV and is attributed to I-131 at 364.5 keV; when quantified as I-131 a result of 20. \pm 1.3 pCi/L was obtained.

On March 23 the sample was acidified to pH < 2 with nitric acid and allowed to stand a minimum of 24 hours pending further analysis.

Plutonium analysis was performed 24-Mar-95 thru 31-MAR-95.

Reviewed By:

Loren A. Berge
Loren A. Berge, Ph.D. 03/31/95
Supervisor, Radiochemistry Section

SCIENTIFIC LABORATORY DIVISION

P.O. Box 4700
Albuquerque, NM 87196-4700700 Camino de Salud, NE
[505]-841-2500

RADIOCHEMISTRY SECTION [505]-841-2574

August 22, 1996

Request
ID No. 137235**ANALYTICAL REPORT**
SLD Accession No. RC-96-0351Distribution☐ User 55814
☒ Submitter 514
☒ SLD FilesTo: Bill Floyd
ED - Rad. Licensing/Regulation
Haz. & Rad. Materials Bureau
P.O. Box 26110
Santa Fe, NM 87502From: Radiochemistry Section
Scientific Laboratory Div.
700 Camino de Salud, N.E.
P.O. Box 4700
Albuquerque, NM 87196-4700

Re: A sludge sample submitted to this laboratory on August 1, 1996

DEMOGRAPHIC DATA

COLLECTION		LOCATION
On: 30-Jul-96	By: Lop . . .	Sludge Field; City of Santa Fe
At: 9:30 hrs.	In/Near: Santa Fe	

ANALYTICAL RESULTS

Analysis	Value	Sigma	D. Lmt.	Units	Analyst
G-Alpha w/ Am-241 ref.	15.60	2.60	1.40	pCi/G-Dry Troxel	
G-Alpha w/ U -nat ref.	20.00	2.80	1.80	pCi/G-Dry Troxel	
G-Beta w/ Cs-137 ref.	29.00	3.20	3.00	pCi/G-Dry Troxel	
G-Beta w/ Sr/Y90 ref.	26.80	2.80	2.80	pCi/G-Dry Troxel	
U -234, Alpha Spec.	3.88	0.31	0.03	pCi/G-Dry Monroe	
U -238, Alpha Spec.	2.64	0.21	0.03	pCi/G-Dry Monroe	
Am-241, Alpha Spec.	-0.02	0.02	0.11	pCi/G-Dry Ewing	
Pu-238, Alpha Spec.	0.01	0.02	0.10	pCi/G-Dry Ewing	
Pu-239+240, Alpha Spec	0.02	0.02	0.06	pCi/G-Dry Ewing	

Notations & Comments:

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Laboratory Remarks:

Gamma *Qualitative Only* Assessment:

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The sample, as received, was wrapped in bulk with household aluminum foil and placed on the detector in a non-standard geometry to provide an assesment of the raw sample. The acquisition was started at 08:00 on 02-Aug and the peaks seen were attributable to the 'naturals'. After 19000 sec (5.3 hr) the accumulated spectrum showed the presence of peaks for the 'naturals' and in very trace amounts, for Cs-137 (661. keV) and Co-60 (1173 & 1332 keV).

Preparation of Sample for Analysis:

(Continued on page 2.)



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The sample was dried (02-Aug to 05-Aug-96) for at least 16 hours in a 110 degree C oven and a 20.% weight loss (moisture) was observed. The dried sample was homogenized and ball milled. After ball milling, to prevent damage to powder mill, 3.6% coarse/oversize material was removed; with the remainder powder milled on 8-Aug-96 at 8:00 am, and used as the analytical sample.

For Gamma Spectroscopy, Pellet Pressed: 08-Aug-96 at 08:30 am.

Gamma Spectroscopy Report of freshly pressed pellet:

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A 150. Gram sample counted as a pressed pellet on 8-Aug-96 at 8:45 am by JL Ewing and LA Berge.

Nuclide &	T-1/2	Value (pCi/G)	1-Sigma (pCi/G)	MDA (pCi/G)
K-40	1.3 GY	15.4	1.6	0.4
Mn-54	312. D	n/d	- -	0.04
Co-57	272. D	n/d	- -	0.02
Co-58	71. D	n/d	- -	0.04
Co-60	5.27 Y	0.06	0.01	0.03
Ag-110m	250. D	n/d	- -	0.04
Sb-125	2.73 Y	n/d	- -	0.09
Cs-134	2.06 Y	n/d	- -	0.04
Cs-137	30.0 Y	0.12	0.02	0.03
Ac-228eq	5.75 Y	1.0	0.11	0.12
Pb-212eq	1.91 Y	1.1	0.13	0.05
Bi-212eq	1.91 Y	1.0	0.18	0.3
Tl-208eq	1.91 Y	0.33	0.04	0.05
Th-234eq	4.5 GY	2.6	0.6	0.4
Ra-226	1.6 kY	(not calculated)		0.6
Pb-214eq	1.6 kY	0.9	0.10	0.08
Bi-214eq	1.6 kY	0.72	0.08	0.08
Pb-210	20.4 Y	1.0	0.4	0.9
U-235	703.8 MY	0.30	0.09	0.3
Am-241	432.2 Y	n/d	- -	0.06

Reviewed By:

Loren A. Berge, Ph.D. 08/22/96
Supervisor, Radiochemistry Section

SCIENTIFIC LABORATORY DIVISION

P.O. Box 4700
Albuquerque, NM 87196-4700700 Camino de Salud, NE
[505]-841-2500

RADIOCHEMISTRY SECTION [505]-841-2574

November 20, 1996

Request
ID No. 147457

ANALYTICAL REPORT

SLD Accession No. RC-96-0461

Distribution☐ User 55814
☒ Submitter 514
☒ SLD FilesTo: Bill Floyd
ED - Rad. Licensing/Regulation
Haz. & Rad. Materials Bureau
P.O. Box 26110
Santa Fe, NM 87502From: Radiochemistry Section
Scientific Laboratory Div.
700 Camino de Salud, N.E.
P.O. Box 4700
Albuquerque, NM 87196-4700

Re: A soil sample submitted to this laboratory on October 17, 1996

DEMOGRAPHIC DATA

COLLECTION		LOCATION
On: 10-Oct-96	By: Med . . .	SE Corner Polo/Soccer Field
At: 17:08 hrs.	In/Near: Santa Fe	

ANALYTICAL RESULTS

Analysis	Value	Sigma	D. Lmt.	Units	Analyst
G-Alpha w/ Am-241 ref.	13.30	2.10	1.60	pCi/G-dry	Troxel
G-Alpha w/ U -nat ref.	16.70	2.40	2.10	pCi/G-dry	Troxel
G-Beta w/ Cs-137 ref.	27.50	3.20	2.90	pCi/G-dry	Troxel
G-Beta w/ Sr/Y90 ref.	26.20	2.90	2.80	pCi/G-dry	Troxel
U -234, Alpha Spec.	0.97	0.06	0.02	pCi/G-dry	Monroe
U -238, Alpha Spec.	0.89	0.06	0.06	pCi/G-dry	Monroe
Am-241, Alpha Spec.	0.02	0.02	0.08	pCi/G-dry	Ewing
Pu-239+240, Alpha Spec	0.00	0.01	0.06	pCi/G-dry	Ewing
Pu-238, Alpha Spec.	-0.01	0.01	0.05	pCi/G-dry	Ewing

Notations & Comments:

Uncertainties, sigmas, are expressed as +- one standard deviation, i.e. one standard error.

Small negative or positive values which are less than two(2) standard deviations should be interpreted as: including 'zero'; as 'not detected'; as 'less than the detection limit (<D. Lmt.)' when reported; or 'less than twice the standard deviation'.

Laboratory Remarks:

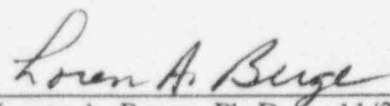
Preparation of Sample for Analysis:

=====

The sample was dried (17-Oct to 21-Oct-96) for at least 16 hours in a 110 degree C oven and a 17.% weight loss (moisture) was observed. The dried sample was homogenized and ball milled. After ball milling, to prevent damage to powder mill, 4.5% coarse/oversize material was removed; with the remainder powder milled and used as the analytical sample.

GAMMA RESULTS: See attached "Gamma Spectroscopy Report"

Reviewed By:


Loren A. Berge, Ph.D. 11/20/96
Supervisor, Radiochemistry Section

SCIENTIFIC LABORATORY DIVISION

P.O. Box 4700
Albuquerque, NM 87196-4700700 Camino de Salud, NE
[505]-841-2500

RADIOCHEMISTRY SECTION [505]-841-2574

November 20, 1996

Request
ID No. 147459ANALYTICAL REPORT
SLD Accession No. RC-96-0460Distribution
☐ User 55814
☒ Submitter 514
☒ SLD FilesTo: Bill Floyd
ED - Rad. Licensing/Regulation
Haz. & Rad. Materials Bureau
P.O. Box 26110
Santa Fe, NM 87502From: Radiochemistry Section
Scientific Laboratory Div.
700 Camino de Salud, N.E.
P.O. Box 4700
Albuquerque, NM 87196-4700

Re: A soil sample submitted to this laboratory on October 17, 1996

DEMOGRAPHIC DATA

COLLECTION		LOCATION
On: 10-Oct-96	By: Med . . .	SW Corner Polo/Soccer Field
At: 17:23 hrs.	In/Near: Santa Fe	

ANALYTICAL RESULTS

Analysis	Value	Sigma	D. Lmt.	Units	Analyst
G-Alpha w/ Am-241 ref.	13.80	2.20	1.60	pCi/G-dry	Troxel
G-Alpha w/ U -nat ref.	17.60	2.50	2.00	pCi/G-dry	Troxel
G-Beta w/ Cs-137 ref.	28.90	2.70	2.80	pCi/G-dry	Troxel
G-Beta w/ Sr/Y90 ref.	27.50	2.40	2.70	pCi/G-dry	Troxel
U -234, Alpha Spec.	0.98	0.06	0.02	pCi/G-dry	Monroe
U -238, Alpha Spec.	0.87	0.06	0.06	pCi/G-dry	Monroe
Am-241, Alpha Spec.	0.04	0.02	0.08	pCi/G-dry	Ewing
Pu-239+240, Alpha Spec	0.01	0.01	0.06	pCi/G-dry	Ewing
Pu-238, Alpha Spec.	-0.01	0.01	0.05	pCi/G-dry	Ewing

Notations & Comments:

Uncertainties, sigmas, are expressed as +/- one standard deviation, i.e. one standard error.

Small negative or positive values which are less than two(2) standard deviations should be interpreted as: including 'zero'; as 'not detected'; as 'less than the detection limit (<D. Lmt.)' when reported; or 'less than twice the standard deviation'.

Laboratory Remarks:

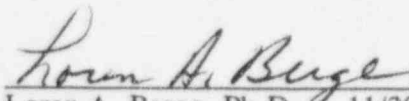
Preparation of Sample for Analysis:

=====

The sample was dried (17-Oct to 21-Oct-96) for at least 16 hours in a 110 degree C oven and a 17.% weight loss (moisture) was observed. The dried sample was homogenized and ball milled. After ball milling, to prevent damage to powder mill, 3.7% coarse/oversize material was removed; with the remainder powder milled and used as the analytical sample.

GAMMA RESULTS: See attached "Gamma Spectroscopy Report"

Reviewed By:


Loren A. Berge, Ph.D. 11/20/96
Supervisor, Radiochemistry Section

SCIENTIFIC LABORATORY DIVISION

P.O. Box 4700
Albuquerque, NM 87196-4700700 Camino de Salud, NE
[505]-841-2500

RADIOCHEMISTRY SECTION [505]-841-2574

November 20, 1996

Request
ID No. 147458

ANALYTICAL REPORT

SLD Accession No. RC-96-0455

Distribution☐ User 55814
☒ Submitter 514
☒ SLD FilesTo: Bill Floyd
ED - Rad. Licensing/Regulation
Haz. & Rad. Materials Bureau
P.O. Box 26110
Santa Fe, NM 87502From: Radiochemistry Section
Scientific Laboratory Div.
700 Camino de Salud, N.E.
P.O. Box 4700
Albuquerque, NM 87196-4700

Re: A soil sample submitted to this laboratory on October 17, 1996

DEMOGRAPHIC DATA

COLLECTION		LOCATION
On: 10-Oct-96	By: Med . . .	Middle Polo/Soccerr Field
At: 16:50 hrs.	In/Near: Santa Fe	

ANALYTICAL RESULTS

Analysis	Value	Sigma	D. Lmt.	Units	Analyst
G-Alpha w/ Am-241 ref.	14.80	2.20	1.60	pCi/G-dry	Troxel
G-Alpha w/ U -nat ref.	19.00	2.60	2.00	pCi/G-dry	Troxel
G-Beta w/ Cs-137 ref.	29.10	2.70	2.80	pCi/G-dry	Troxel
G-Beta w/ Sr/Y90 ref.	27.60	2.40	2.60	pCi/G-dry	Troxel
U -234, Alpha Spec.	0.86	0.06	0.05	pCi/G-dry	Monroe
U -238, Alpha Spec.	0.88	0.06	0.04	pCi/G-dry	Monroe
Am-241, Alpha Spec.	0.02	0.02	0.08	pCi/G-dry	Ewing
Pu-239+240, Alpha Spec	0.03	0.02	0.08	pCi/G-dry	Ewing
Pu-238, Alpha Spec.	-0.02	0.01	0.08	pCi/G-dry	Ewing

Notations & Comments:

Uncertainties, sigmas, are expressed as +- one standard deviation, i.e. one standard error.

Small negative or positive values which are less than two(2) standard deviations should be interpreted as: including 'zero'; as 'not detected'; as 'less than the detection limit (<D. Lmt.)' when reported; or 'less than twice the standard deviation'.

Laboratory Remarks:

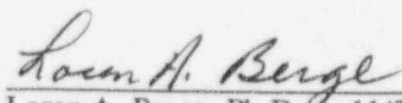
Preparation of Sample for Analysis:

=====

The sample was dried (17-Oct to 21-Oct-96) for at least 16 hours in a 110 degree C oven and a 16.% weight loss (moisture) was observed. The dried sample was homogenized and ball milled. After ball milling, to prevent damage to powder mill, 3.3% coarse/oversize material was removed; with the remainder powder milled and used as the analytical sample.

GAMMA RESULTS: See attached "Gamma Spectroscopy Report"

Reviewed By:

Loren A. Berge, Ph.D. 11/20/96
Supervisor, Radiochemistry Section

SCIENTIFIC LABORATORY DIVISION

P.O. Box 4700
Albuquerque, NM 87196-4700700 Camino de Salud, NE
[505]-841-2500

RADIOCHEMISTRY SECTION [505]-841-2574

November 20, 1996

Request
ID No. 147456ANALYTICAL REPORT
SLD Accession No. RC-96-0462Distribution☐ User 55814
☒ Submitter 514
☒ SLD FilesTo: Bill Floyd
ED - Rad. Licensing/Regulation
Haz. & Rad. Materials Bureau
P.O. Box 26110
Santa Fe, NM 87502From: Radiochemistry Section
Scientific Laboratory Div.
700 Camino de Salud, N.E.
P.O. Box 4700
Albuquerque, NM 87196-4700

Re: A soil sample submitted to this laboratory on October 17, 1996

DEMOGRAPHIC DATA

COLLECTION		LOCATION
On: 10-Oct-96	By: Med . . .	NE Corner Polo/Soccer Field
At: 16:30 hrs.	In/Near: Santa Fe	

ANALYTICAL RESULTS

Analysis	Value	Sigma	D. Lmt.	Units	Analyst
G-Alpha w/ Am-241 ref.	16.30	2.60	1.60	pCi/G-dry	Troxel
G-Alpha w/ U -nat ref.	20.70	3.00	2.00	pCi/G-dry	Troxel
G-Beta w/ Cs-137 ref.	26.70	2.90	2.90	pCi/G-dry	Troxel
G-Beta w/ Sr/Y90 ref.	25.40	2.60	2.70	pCi/G-dry	Troxel
U -234, Alpha Spec.	0.99	0.07	0.06	pCi/G-dry	Monroe
U -238, Alpha Spec.	1.02	0.07	0.06	pCi/G-dry	Monroe
Am-241, Alpha Spec.	0.02	0.02	0.08	pCi/G-dry	Ewing
Pu-239+240, Alpha Spec	0.03	0.01	0.06	pCi/G-dry	Ewing
Pu-238, Alpha Spec.	-0.02	0.01	0.06	pCi/G-dry	Ewing

Notations & Comments:

Uncertainties, sigmas, are expressed as +/- one standard deviation, i.e. one standard error.

Small negative or positive values which are less than two(2) standard deviations should be interpreted as: including 'zero'; as 'not detected'; as 'less than the detection limit (<D. Lmt.)' when reported; or 'less than twice the standard deviation'.

Laboratory Remarks:

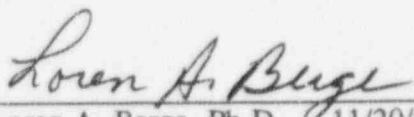
Preparation of Sample for Analysis:

=====

The sample was dried (17-Oct to 21-Oct-96) for at least 16 hours in a 110 degree C oven and a 16.% weight loss (moisture) was observed. The dried sample was homogenized and ball milled. After ball milling, to prevent damage to powder mill, 1.6% coarse/oversize material was removed; with the remainder powder milled and used as the analytical sample.

GAMMA RESULTS: See attached "Gamma Spectroscopy Report"

Reviewed By:


Loren A. Berge, Ph.D. 11/20/96
Supervisor, Radiochemistry Section

SCIENTIFIC LABORATORY DIVISION

P.O. Box 4700
Albuquerque, NM 87196-4700700 Camino de Salud, NE
[505]-841-2500

RADIOCHEMISTRY SECTION [505]-841-2574

November 20, 1996

Request
ID No. 147455ANALYTICAL REPORT
SLD Accession No. RC-96-0459Distribution☐ User 55814
☒ Submitter 514
☒ SLD FilesTo: Bill Floyd
ED - Rad. Licensing/Regulation
Haz. & Rad. Materials Bureau
P.O. Box 26110
Santa Fe, NM 87502From: Radiochemistry Section
Scientific Laboratory Div.
700 Camino de Salud, N.E.
P.O. Box 4700
Albuquerque, NM 87196-4700

Re: A soil sample submitted to this laboratory on October 17, 1996

DEMOGRAPHIC DATA

COLLECTION		LOCATION
On: 10-Oct-96	By: Med . . .	NW Corner Polo/Soccer Field
At: 16:15 hrs.	In/Near: Santa Fe	

ANALYTICAL RESULTS

Analysis	Value	Sigma	D. Lmt.	Units	Analyst
G-Alpha w/ Am-241 ref.	11.40	1.90	1.60	pCi/G-dry Troxel	
G-Alpha w/ U -nat ref.	14.60	2.20	2.00	pCi/G-dry Troxel	
G-Beta w/ Cs-137 ref.	25.60	2.50	2.80	pCi/G-dry Troxel	
G-Beta w/ Sr/Y90 ref.	24.30	2.30	2.60	pCi/G-dry Troxel	
U -234, Alpha Spec.	0.98	0.07	0.05	pCi/G-dry Monroe	
U -238, Alpha Spec.	0.91	0.06	0.04	pCi/G-dry Monroe	
Am-241, Alpha Spec.	0.02	0.02	0.08	pCi/G-dry Ewing	
Pu-239+240, Alpha Spec	0.00	0.01	0.06	pCi/G-dry Ewing	
Pu-238, Alpha Spec.	-0.01	0.02	0.10	pCi/G-dry Ewing	

Notations & Comments:

Uncertainties, sigmas, are expressed as +- one standard deviation, i.e. one standard error.

Small negative or positive values which are less than two(2) standard deviations should be interpreted as: including 'zero'; as 'not detected'; as 'less than the detection limit (<D. Lmt.)' when reported; or 'less than twice the standard deviation'.

Laboratory Remarks:

Preparation of Sample for Analysis:

=====

The sample was dried (17-Oct to 21-Oct-96) for at least 16 hours in a 110 degree C oven and a 16.% weight loss (moisture) was observed. The dried sample was homogenized and ball milled. After ball milling, to prevent damage to powder mill, 15.% coarse/oversize material was removed; with the remainder powder milled and used as the analytical sample.

GAMMA RESULTS: See attached "Gamma Spectroscopy Report"

Reviewed By:

Loren A. Berge
Loren A. Berge, Ph.D. 11/20/96
Supervisor, Radiochemistry Section

SCIENTIFIC LABORATORY DIVISION

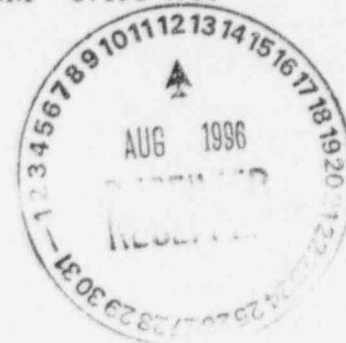
P.O. Box 4700
Albuquerque, NM 87196-4700700 Camino de Salud, NE
[505]-841-2500

RADIOCHEMISTRY SECTION [505]-841-2574

August 8, 1996

Request
ID No. 147445ANALYTICAL REPORT
SLD Accession No. RC-96-0336Distribution☐ User 55814
☒ Submitter 514
☒ SLD FilesTo: Bill Floyd
ED - Rad. Licensing/Regulation
Haz. & Rad. Materials Bureau
P.O. Box 26110
Santa Fe, NM 87502From: Radiochemistry Section
Scientific Laboratory Division
700 Camino de Salud, NE
P.O. Box 4700
Albuquerque, NM 87196-4700

Re: A soil sample submitted to this laboratory on July 22, 1996

User:ED Radiation Licensing & Reg.
NM-ED H & R Materials Bureau
P.O. Box 26110
Santa Fe, NM 87502

DEMOGRAPHIC DATA

COLLECTION		LOCATION
On: 19-Jul-96	By: Flo ...	5th Fairway
At: 12:15 hrs.	In/Near: Santa Fe	Las Campanas Golf Course
		(Santa Fe sewage treatment facility effluent Not used on this golf course)

ANALYTICAL RESULTS

Analysis	Value	Sigma	D. Lmt.	Units	Analyst
G-Alpha w/ Am-241 ref.	11.30	2.10	1.80	pCi/G-Dry	Troxel
G-Alpha w/ U -nat ref.	14.90	2.40	2.40	pCi/G-Dry	Troxel
G-Beta w/ Cs-137 ref.	28.30	3.60	3.30	pCi/G-Dry	Troxel
G-Beta w/ Sr/Y90 ref.	26.60	3.30	3.10	pCi/G-Dry	Troxel
U -234, Alpha Spec.	1.13	0.08	0.03	pCi/G-Dry	Monroe
U -238, Alpha Spec.	1.04	0.07	0.02	pCi/G-Dry	Monroe
Am-241, Alpha Spec.	0.02	0.02	0.10	pCi/G-Dry	Ewing
Pu-238, Alpha Spec.	0.00	0.02	0.11	pCi/G-Dry	Ewing
Pu-239+240, Alpha Spec	0.01	0.02	0.07	pCi/G-Dry	Ewing

Notations & Comments:

Uncertainties, sigmas, are expressed as +- one standard deviation, i.e. one standard error.

Small negative or positive values which are less than two(2) standard deviations should be interpreted as: including 'zero'; as 'not detected'; as 'less than the detection limit (<D. Lmt.)' when reported; or 'less than twice the standard deviation'.

Laboratory Remarks:

Preparation of Sample for Analysis:

=====

(Continued on page 2.)

The sample was dried (22-Jul to 24-Jul-96) for at least 16 hours in a 110 degree C oven and a 19.% weight loss (moisture) was observed. The dried sample was homogenized and ball milled. After ball milling, to prevent damage to powder mill, 11.% coarse/oversize material was removed; with the remainder powder milled and used as the analytical sample.

Gamma Spectroscopy Report:

=====

A 150. Gram sample counted as a pressed pellet on 7-Aug-96 by JL Ewing and LA Berge.

Nuclide &	T-1/2	Value (pCi/G)	1-Sigma (pCi/G)	MDA (pCi/G)
-----	-----	-----	-----	-----
K-40	1.3 GY	15.5	1.6	0.4
Mn-54	312. D	n/d	- -	0.03
Co-57	272. D	n/d	- -	0.02
Co-58	71. D	n/d	- -	0.04
Co-60	5.27 Y	n/d	- -	0.03
Ag-110m	250. D	n/d	- -	0.04
Sb-125	2.73 Y	n/d	- -	0.09
Cs-134	2.06 Y	n/d	- -	0.04
Cs-137	30.0 Y	0.22	0.03	0.03
Ac-228eq	5.75 Y	0.9	0.10	0.11
Pb-212eq	1.91 Y	1.0	0.12	0.05
Bi-212eq	1.91 Y	0.8	0.16	0.4
Tl-208eq	1.91 Y	0.30	0.04	0.04
Th-234eq	4.5 GY	1.0	0.3	0.3
Ra-226	1.6 kY	1.2	0.2	0.6
Pb-214eq	1.6 kY	0.9	0.10	0.08
Bi-214eq	1.6 kY	0.71	0.08	0.06
Pb-210	20.4 Y	1.0	0.5	1.2
U-235	703.8 MY	n/d	- -	0.15
Am-241	432.2 Y	n/d	- -	0.05

Reviewed By: Loren A. Berge
 Loren A. Berge, Ph.D. 08/08/96
 Supervisor, Radiochemistry Section

SCIENTIFIC LABORATORY DIVISION

P.O. Box 4700
Albuquerque, NM 87196-4700

700 Camino de Salud, NE
[505]-841-2500

RADIOCHEMISTRY SECTION [505]-841-2574

August 6, 1996

Request
ID No. 147444

ANALYTICAL REPORT
SLD Accession No. RC-96-0334

Distribution

☐ User 55814
☒ Submitter 514
☒ SLD Files

To: Bill Floyd
ED - Rad. Licensing/Regulation
Haz. & Rad. Materials Bureau
P.O. Box 26110
Santa Fe, NM 87502

From: Radiochemistry Section
Scientific Laboratory Division
700 Camino de Salud, NE
P.O. Box 4700
Albuquerque, NM 87196-4700

Re: A soil sample submitted to this laboratory on July 22, 1996

User:

ED Radiation Licensing & Reg.
NM-ED H & R Materials Bureau
P.O. Box 26110
Santa Fe, NM 87502



DEMOGRAPHIC DATA

COLLECTION		LOCATION
On: 19-Jul-96	By: Flo . . .	7th Fairway
At: 9:40 hrs.	In/Near: Santa Fe	7th Tee on
		Santa Fe Country Club Golf Course

ANALYTICAL RESULTS

Analysis	Value	Sigma	D. Lmt.	Units	Analyst
G-Alpha w/ Am-241 ref.	10.90	2.00	1.80	pCi/G-Dry	Troxel
G-Alpha w/ U -nat ref.	14.40	2.40	2.40	pCi/G-Dry	Troxel
G-Beta w/ Cs-137 ref.	30.80	3.10	3.30	pCi/G-Dry	Troxel
G-Beta w/ Sr/Y90 ref.	29.00	2.70	3.10	pCi/G-Dry	Troxel
U -234, Alpha Spec.	1.07	0.07	0.03	pCi/G-Dry	Monroe
U -238, Alpha Spec.	0.98	0.07	0.02	pCi/G-Dry	Monroe
Am-241, Alpha Spec.	0.04	0.02	0.10	pCi/G-Dry	Ewing
Pu-238, Alpha Spec.	0.01	0.02	0.12	pCi/G-Dry	Ewing
Pu-239+240, Alpha Spec	0.02	0.02	0.07	pCi/G-Dry	Ewing

Notations & Comments:

Uncertainties, sigmas, are expressed as +- one standard deviation, i.e. one standard error.

Small negative or positive values which are less than two(2) standard deviations should be interpreted as: including 'zero'; as 'not detected'; as 'less than the detection limit (<D. Lmt.)' when reported; or 'less than twice the standard deviation'.

Laboratory Remarks:

Preparation of Sample for Analysis:

=====

(Continued on page 2.)

The sample was dried (22-Jul to 24-Jul-96) for at least 16 hours in a 110 degree C oven and a 21.% weight loss (moisture) was observed. The dried sample was homogenized and ball milled. After ball milling, to prevent damage to powder mill, 5.9% coarse/oversize material was removed; with the remainder powder milled and used as the analytical sample.

Gamma Spectroscopy Report:

=====

A 150. Gram sample counted as a pressed pellet on 5-Aug-96 by JL Ewing and LA Berge.

Nuclide &	T-1/2	Value (pCi/G)	1-Sigma (pCi/G)	MDA (pCi/G)
K-40	1.3 GY	17.5	1.8	0.4
Mn-54	312. D	n/d	- -	0.04
Co-57	272. D	n/d	- -	0.02
Co-58	71. D	n/d	- -	0.04
Co-60	5.27 Y	n/d	- -	0.03
Ag-110m	250. D	n/d	- -	0.04
Sb-125	2.73 Y	n/d	- -	0.09
Cs-134	2.06 Y	n/d	- -	0.04
Cs-137	30.0 Y	0.30	0.04	0.03
Ac-228eq	5.75 Y	1.1	0.12	0.11
Pb-212eq	1.91 Y	1.2	0.14	0.05
Bi-212eq	1.91 Y	1.2	0.22	0.5
Tl-208eq	1.91 Y	0.36	0.05	0.05
Th-234eq	4.5 GY	1.3	0.3	0.3
Ra-226	1.6 kY	1.1	0.2	0.6
Pb-214eq	1.6 kY	1.2	0.13	0.10
Bi-214eq	1.6 kY	0.87	0.10	0.08
Pb-210	20.4 Y	2.7	0.5	0.9
U-235	703.8 MY	n/d	- -	0.16
Am-241	432.2 Y	n/d	- -	0.06

Reviewed By: Loren A. Berge
Loren A. Berge, Ph.D. 08/06/96
Supervisor, Radiochemistry Section

SCIENTIFIC LABORATORY DIVISION

P.O. Box 4700
Albuquerque, NM 87196-4700700 Camino de Salud, NE
[505]-841-2500

RADIOCHEMISTRY SECTION [505]-841-2574

August 5, 1996

Request
ID No. 137234ANALYTICAL REPORT
SLD Accession No. RC-96-0327Distribution☐ User 55814
☒ Submitter 514
☒ SLD FilesTo: B. Floyd
ED - Rad. Licensing/Regulation
Haz. & Rad. Materials Bureau
P.O. Box 26110
Santa Fe, NM 87502From: Radiochemistry Section
Scientific Laboratory Division
700 Camino de Salud, NE
P.O. Box 4700
Albuquerque, NM 87196-4700

Re: A soil sample submitted to this laboratory on July 18, 1996

User:ED Radiation Licensing & Reg.
NM-ED H & R Materials Bureau
P.O. Box 26110
Santa Fe, NM 87502

DEMOGRAPHIC DATA

COLLECTIONLOCATIONOn: 16-Jul-96 By: Flo . . .
At: 0:00 hrs. In/Near: Santa FeGreen Maintenance Shed
Near 8th Green um
Santa Fe Country Club Golf Course

ANALYTICAL RESULTS

Analysis	Value	Sigma	D. Lmt.	Units	Analyst
G-Alpha w/ Am-241 ref.	12.20	2.60	2.00	pCi/G-Dry Troxel	
G-Alpha w/ U -nat ref.	15.60	3.00	2.50	pCi/G-Dry Troxel	
G-Beta w/ Cs-137 ref.	31.40	3.50	3.60	pCi/G-Dry Troxel	
G-Beta w/ Sr/Y90 ref.	29.80	3.10	3.40	pCi/G-Dry Troxel	
U -234, Alpha Spec.	1.26	0.08	0.03	pCi/G-Dry Monroe	
U -238, Alpha Spec.	1.05	0.07	0.02	pCi/G-Dry Monroe	
Am-241, Alpha Spec.	0.03	0.02	0.09	pCi/G-Dry Ewing	
Pu-238, Alpha Spec.	0.01	0.02	0.11	pCi/G-Dry Ewing	
Pu-239+240, Alpha Spec	0.03	0.02	0.07	pCi/G-Dry Ewing	

Notations & Comments:

Uncertainties, sigmas, are expressed as +- one standard deviation, i.e. one standard error.

Small negative or positive values which are less than two(2) standard deviations should be interpreted as: including 'zero'; as 'not detected'; as 'less than the detection limit (<D. Lmt.)' when reported; or 'less than twice the standard deviation'.

Laboratory Remarks:

Preparation of Sample for Analysis:

=====

(Continued on page 2.)

The sample was dried (19-Jul to 23-Jul-96) for at least 16 hours in a 110 degree C oven and a 22.% weight loss (moisture) was observed. The dried sample was homogenized and ball milled. After ball milling, to prevent damage to powder mill, 4.0% coarse/oversize material was removed; with the remainder powder milled and used as the analytical sample.

Gamma Spectroscopy Report:

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A 150. Gram sample counted as a pressed pellet on 30-Jul-96 by JJ. Ewing.

Nuclide &	T-1/2	Value (pCi/G)	1-Sigma (pCi/G)	MDA (pCi/G)
K-40	1.3 GY	17.	2.	0.4
Mn-54	312. D	n/d	- -	0.03
Co-57	272. D	n/d	- -	0.02
Co-58	71. D	n/d	- -	0.03
Co-60	5.27 Y	n/d	- -	0.03
Ag-110m	250. D	n/d	- -	0.04
Sb-125	2.73 Y	n/d	- -	0.09
Cs-134	2.06 Y	n/d	- -	0.04
Cs-137	30.0 Y	0.37	0.05	0.04
Ac-228eq	5.75 Y	1.3	0.2	0.12
Pb-212eq	1.91 Y	1.2	0.2	0.05
Bi-212eq	1.91 Y	0.9	0.2	0.4
Tl-208eq	1.91 Y	0.37	0.05	0.04
Th-234eq	4.5 GY	1.4	0.4	0.3
Ra-226	1.6 kY	1.1	0.2	0.6
Pb-214eq	1.6 kY	1.1	0.15	0.07
Bi-214eq	1.6 kY	0.8	0.10	0.09
Pb-210	20.4 Y	2.7	0.5	0.9
U-235	703.8 MY	0.07	0.02	0.11
Am-241	432.2 Y	n/d	- -	0.05

Reviewed By: Loren A. Berge
Loren A. Berge, Ph.D. 08/05/96
Supervisor, Radiochemistry Section

SCIENTIFIC LABORATORY DIVISION

P.O. Box 4700
Albuquerque, NM 87196-4700700 Camino de Salud, NE
[505]-841-2500

RADIOCHEMISTRY SECTION [505]-841-2574

August 22, 1996

Request
ID No. 137235ANALYTICAL REPORT
SLD Accession No. RC-96-0351Distribution☐ User 55814
☒ Submitter 514
☒ SLD FilesTo: Bill Floyd
ED - Rad. Licensing/Regulation
Haz. & Rad. Materials Bureau
P.O. Box 26110
Santa Fe, NM 87502From: Radiochemistry Section
Scientific Laboratory Div.
700 Camino de Salud, N.E.
P.O. Box 4700
Albuquerque, NM 87196-4700

Re: A sludge sample submitted to this laboratory on August 1, 1996

DEMOGRAPHIC DATA

COLLECTION		LOCATION
On: 30-Jul-96	By: Lop . . .	Sludge Field; City of Santa Fe
At: 9:30 hrs.	In/Near: Santa Fe	

ANALYTICAL RESULTS

Analysis	Value	Sigma	D. Lmt.	Units	Analyst
G-Alpha w/ Am-241 ref.	15.60	2.60	1.40	pCi/G-Dry	Troxel
G-Alpha w/ U -nat ref.	20.00	2.80	1.80	pCi/G-Dry	Troxel
G-Beta w/ Cs-137 ref.	29.00	3.20	3.00	pCi/G-Dry	Troxel
G-Beta w/ Sr/Y90 ref.	26.80	2.80	2.80	pCi/G-Dry	Troxel
U -234, Alpha Spec.	3.88	0.31	0.03	pCi/G-Dry	Monroe
U -238, Alpha Spec.	2.64	0.21	0.03	pCi/G-Dry	Monroe
Am-241, Alpha Spec.	-0.02	0.02	0.11	pCi/G-Dry	Ewing
Pu-238, Alpha Spec.	0.01	0.02	0.10	pCi/G-Dry	Ewing
Pu-239+240, Alpha Spec	0.02	0.02	0.06	pCi/G-Dry	Ewing

Notations & Comments:

Uncertainties, sigmas, are expressed as +- one standard deviation, i.e. one standard error.

Small negative or positive values which are less than two(2) standard deviations should be interpreted as: including 'zero'; as 'not detected'; as 'less than the detection limit (<D. Lmt.)' when reported; or 'less than twice the standard deviation'.

Laboratory Remarks:

Gamma *Qualitative Only* Assesment:

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The sample, as received, was wrapped in bulk with household aluminum foil and placed on the detector in a non-standard geometry to provide an assesment of the raw sample. The acquisition was started at 08:00 on 02-Aug and the peaks seen were attributable to the 'naturals'. After 19000 sec (5.3 hr) the accumulated spectrum showed the presence of peaks for the 'naturals' and in very trace amounts, for Cs-137 (661. keV) and Co-60 (1173 & 1332 keV).

Preparation of Sample for Analysis:

(Continued on page 2.)



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The sample was dried (02-Aug to 05-Aug-96) for at least 16 hours in a 110 degree C oven and a 20.% weight loss (moisture) was observed. The dried sample was homogenized and ball milled. After ball milling, to prevent damage to powder mill, 3.6% coarse/oversize material was removed; with the remainder powder milled on 8-Aug-96 at 8:00 am, and used as the analytical sample.

For Gamma Spectroscopy, Pellet Pressed: 08-Aug-96 at 08:30 am.

Gamma Spectroscopy Report of freshly pressed pellet:

=====

A 150. Gram sample counted as a pressed pellet on 8-Aug-96 at 8:45 am by JL Ewing and LA Berge.

Nuclide &	T-1/2	Value (pCi/G)	1-Sigma (pCi/G)	MDA (pCi/G)
-----	-----	-----	-----	-----
K-40	1.3 GY	15.4	1.6	0.4
Mn-54	312. D	n/d	- -	0.04
Co-57	272. D	n/d	- -	0.02
Co-58	71. D	n/d	- -	0.04
Co-60	5.27 Y	0.06	0.01	0.03
Ag-110m	250. D	n/d	- -	0.04
Sb-125	2.73 Y	n/d	- -	0.09
Cs-134	2.06 Y	n/d	- -	0.04
Cs-137	30.0 Y	0.12	0.02	0.03
Ac-228eq	5.75 Y	1.0	0.11	0.12
Pb-212eq	1.91 Y	1.1	0.13	0.05
Bi-212eq	1.91 Y	1.0	0.18	0.3
Tl-208eq	1.91 Y	0.33	0.04	0.05
Th-234eq	4.5 GY	2.6	0.6	0.4
Ra-226	1.6 kY	(not calculated)		0.6
Pb-214eq	1.6 kY	0.9	0.10	0.08
Bi-214eq	1.6 kY	0.72	0.08	0.08
Pb-210	20.4 Y	1.0	0.4	0.9
U-235	703.8 MY	0.30	0.09	0.3
Am-241	432.2 Y	n/d	- -	0.06

Reviewed By:

Loren A. Berge, Ph.D. 08/22/96
 Supervisor, Radiochemistry Section

SCIENTIFIC LABORATORY DIVISION

P.O. Box 4700
Albuquerque, NM 87196-4700

700 Camino de Salud, NE
[505]-841-2500

RADIOCHEMISTRY SECTION [505]-841-2574

August 8, 1996

Request
ID No. 147443

ANALYTICAL REPORT
SLD Accession No. RC-96-0335

Distribution

☐ User 55814
☒ Submitter 514
☒ SLD Files

To: Bill Floyd
ED - Rad. Licensing/Regulation
Haz. & Rad. Materials Bureau
P.O. Box 26110
Santa Fe, NM 87502

From: Radiochemistry Section
Scientific Laboratory Division
700 Camino de Salud, NE
P.O. Box 4700
Albuquerque, NM 87196-4700

Re: A soil sample submitted to this laboratory on July 22, 1996

User:

ED Radiation Licensing & Reg.
NM-ED H & R Materials Bureau
P.O. Box 26110
Santa Fe, NM 87502



DEMOGRAPHIC DATA

COLLECTION		LOCATION
On: 19-Jul-96	By: Flo . . .	Entrance Lawn Area
At: 10:45 hrs.	In/Near: Santa Fe	Santa Fe Downs Race Track

ANALYTICAL RESULTS

Analysis	Value	Sigma	D. Lmt.	Units	Analyst
G-Alpha w/ Am-241 ref.	14.40	3.00	1.90	pCi/G-Dry	Troxel
G-Alpha w/ U -nat ref.	18.40	3.50	2.50	pCi/G-Dry	Troxel
G-Beta w/ Cs-137 ref.	29.30	3.20	3.60	pCi/G-Dry	Troxel
G-Beta w/ Sr/Y90 ref.	27.80	2.80	3.50	pCi/G-Dry	Troxel
U -234, Alpha Spec.	1.16	0.08	0.03	pCi/G-Dry	Monroe
U -238, Alpha Spec.	0.98	0.07	0.02	pCi/G-Dry	Monroe
Am-241, Alpha Spec.	0.02	0.02	0.10	pCi/G-Dry	Ewing
Pu-238, Alpha Spec.	-0.01	0.02	0.11	pCi/G-Dry	Ewing
Pu-239+240, Alpha Spec	0.00	0.02	0.07	pCi/G-Dry	Ewing

Notations & Comments:

Uncertainties, sigmas, are expressed as \pm one standard deviation, i.e. one standard error.

Small negative or positive values which are less than two(2) standard deviations should be interpreted as: including 'zero'; as 'not detected'; as 'less than the detection limit (<D. Lmt.)' when reported; or 'less than twice the standard deviation'.

Laboratory Remarks:

Preparation of Sample for Analysis:

=====

(Continued on page 2.)

The sample was dried (22-Jul to 24-Jul-96) for at least 16 hours in a 110 degree C oven and a 22.% weight loss (moisture) was observed. The dried sample was homogenized and ball milled. After ball milling, to prevent damage to powder mill, 14.% coarse/oversize material was removed; with the remainder powder milled and used as the analytical sample.

Gamma Spectroscopy Report:

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A 150. Gram sample counted as a pressed pellet on 6-Aug-96 by JL Ewing and LA Berge.

Nuclide &	T-1/2	Value (pCi/G)	1-Sigma (pCi/G)	MDA (pCi/G)
-----	-----	-----	-----	-----
K-40	1.3 GY	15.1	1.6	0.4
Mn-54	312. D	n/d	- -	0.03
Co-57	272. D	n/d	- -	0.02
Co-58	71. D	n/d	- -	0.04
Co-60	5.27 Y	n/d	- -	0.03
Ag-110m	250. D	n/d	- -	0.04
Sb-125	2.73 Y	n/d	- -	0.09
Cs-134	2.06 Y	n/d	- -	0.04
Cs-137	30.0 Y	0.08	0.02	0.04
Ac-228eq	5.75 Y	0.7	0.09	0.12
Pb-212eq	1.91 Y	0.9	0.10	0.05
Bi-212eq	1.91 Y	0.5	0.16	0.5
Tl-208eq	1.91 Y	0.24	0.03	0.04
Th-234eq	4.5 GY	1.0	0.3	0.3
Ra-226	1.6 kY	1.2	0.2	0.6
Pb-214eq	1.6 kY	1.0	0.10	0.10
Bi-214eq	1.6 kY	0.74	0.08	0.09
Pb-210	20.4 Y	4.4	0.6	1.0
U-235	703.8 MY	n/d	- -	0.15
Am-241	432.2 Y	n/d	- -	0.05

Reviewed By: Loren A. Berge
Loren A. Berge, Ph.D. 08/08/96
Supervisor, Radiochemistry Section

SCIENTIFIC LABORATORY DIVISION

P.O. Box 4700
Albuquerque, NM 87196-4700700 Camino de Salud, NE
[505]-841-2500

RADIOCHEMISTRY SECTION [505]-841-2574

March 31, 1995

Request
ID No. 108885ANALYTICAL REPORT
SLD Accession No. RC-95-0174Distribution☐ User 55814
☒ Submitter 514
☒ SLD FilesRECEIVED
APR 4 1995To: Margaret Lopez
NM Environment Department
Haz. & Rad. Materials Bureau
P.O. Box 26110
Santa Fe, NM 87502From: Radiochemistry Section
Scientific Laboratory Div.
700 Camino de Salud, N.E.
P.O. Box 4700
Albuquerque, NM 87196-4700

Re: A water sample submitted to this laboratory on March 17, 1995

DEMOGRAPHIC DATA

COLLECTION		LOCATION
On: 16-Mar-95	By: LOP	River Santa Fe
At: 13:25 hrs.	In/Near: Santa Fe	

C = dpm / 222 gpm

ANALYTICAL RESULTS

Analysis	Value	Sigma	D. Lmt.	Units	Analyst
G-Alpha w/ Am-241 ref.	55.00	11.00	3.80	pCi/L	Monroe
G-Alpha w/ U -nat ref.	96.00	13.00	6.30	pCi/L	Monroe
G-Beta w/ Cs-137 ref.	80.00	8.00	4.80	pCi/L	Monroe
G-Beta w/ Sr/Y90 ref.	68.00	6.00	4.10	pCi/L	Monroe
Pu-239, Alpha Spec.	0.01	0.02		pCi/L	Ewing
Pu-238, Alpha Spec.	0.02	0.02		pCi/L	Ewing

Notations & Comments:

Uncertainties, sigmas, are expressed as +- one standard deviation, i.e. one standard error.

Small negative or positive values which are less than two(2) standard deviation should be interpreted as: including 'zero'; as 'not detected'; as 'less than the detection limit (<D. Lmt.)' when reported; or 'less than twice the standard deviation'.

Laboratory Remarks:

Sample received was a water sample with some light reddish brown muddy sediment; not enough to cover bottom of cubitainer, but almost so. It had not been acidified and is being retained unacidified.

Gross alpha/beta analysis was performed 17-Mar-95 thru 20-Mar-95.

Gamma Spectroscopy Results:

=====

Seven gamma peaks were 'detected', greater than system background from 40 keV to 1600 keV for a 1 liter sample of the supplied water counted 20-Mar-95 at 09:35 for 60,000 sec (about 17 Hr) and evaluated at the 95% peak confidence level with Canberra's Spectran-F (V4.1). An LLD calculation at selected energies was performed for the collected spectrum as of the date & time of counting producing:

(Continued on page 2.)

Energy, keV	LLD, gps/L	Energy, keV	LLD, gps/L
100.0	< 0.06	700.0	< 0.2
150.0	< 0.08	800.0	< 0.2
200.0	< 0.1	1000.0	< 0.2
300.0	< 0.1	1200.0	< 0.2
400.0	< 0.1	1400.0	< 0.2
500.0	< 0.1	1600.0	< 0.2
600.0	< 0.2		

A closer inspection of the software 'detected' peaks revealed all were very weak, unreliable (>25% 1 sigma uncertainty in net area), and likely are artificial 'detects';
Therefore:

Zero gamma peaks were reliably observed.

On March 23 the sample was acidified to pH < 2 with nitric acid and allowed to stand a minimum of 24 hours pending further analysis.

Plutonium analysis was performed 24-Mar-95 thru 31-MAR-95.

Reviewed By: Loren A. Berge
Loren A. Berge, Ph.D. 03/31/95
Supervisor, Radiochemistry Section

WASTEWATER TREATMENT PROCESS & INSTRUMENTATION (PHASES I & II)

INTERSTATE NUCLEAR FACILITY
SANTA FE, NEW MEXICO

TABLE OF CONTENTS

WWTS-01	WASTEWATER TREATMENT
WWTS-02	WASTEWATER TREATMENT
P&ID-01	KEY TO SYMBOLS
P&ID-02	SUMPS, SCREENS, AND
P&ID-03	EQUALIZATION TANKS
P&ID-04	FILTER BACKWASH SYSTEM
P&ID-05	SLUDGE THICKENING



PATTERSON ASSOCIATES

CHICAGO, ILLINOIS

DRAFT

TREATMENT SYSTEM PRESENTATION DIAGRAMS (I & II)


LEAR SERVICES
NEW MEXICO

ANSTEC
APERTURE
CARD

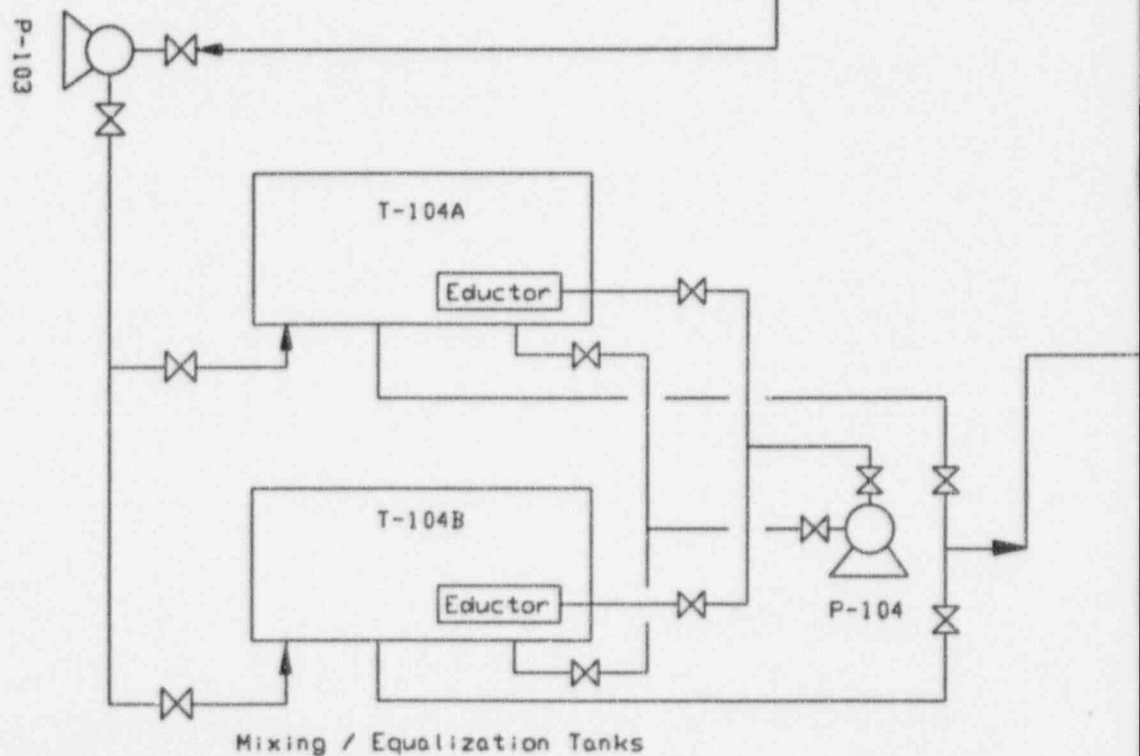
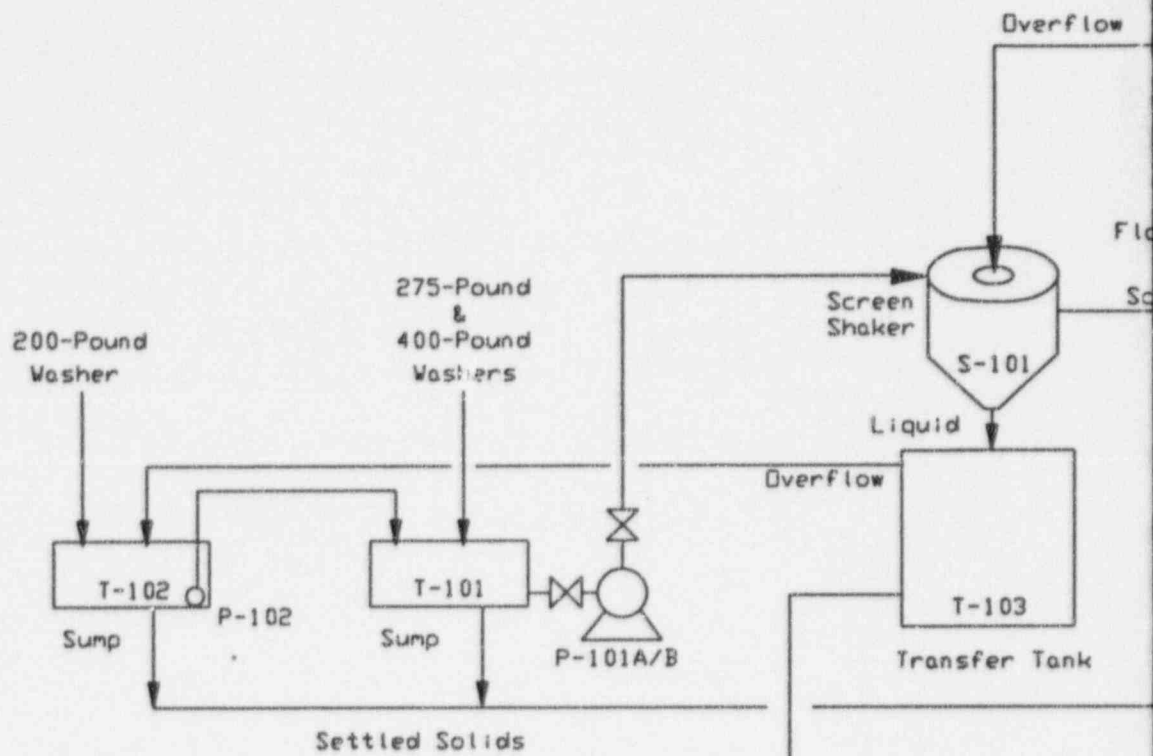
Also Available on
Aperture Card

CONTENTS

TREATMENT SYSTEM SCHEMATIC (PHASE I)
TREATMENT SYSTEM SCHEMATIC (PHASE II)
& DESIGNATIONS
SHAKER
TANKS, PRESSURE FILTERS
I, EFFLUENT MONITORING
ER, FILTER PRESS & DRYER

OCIATES, INC 
ILINOIS

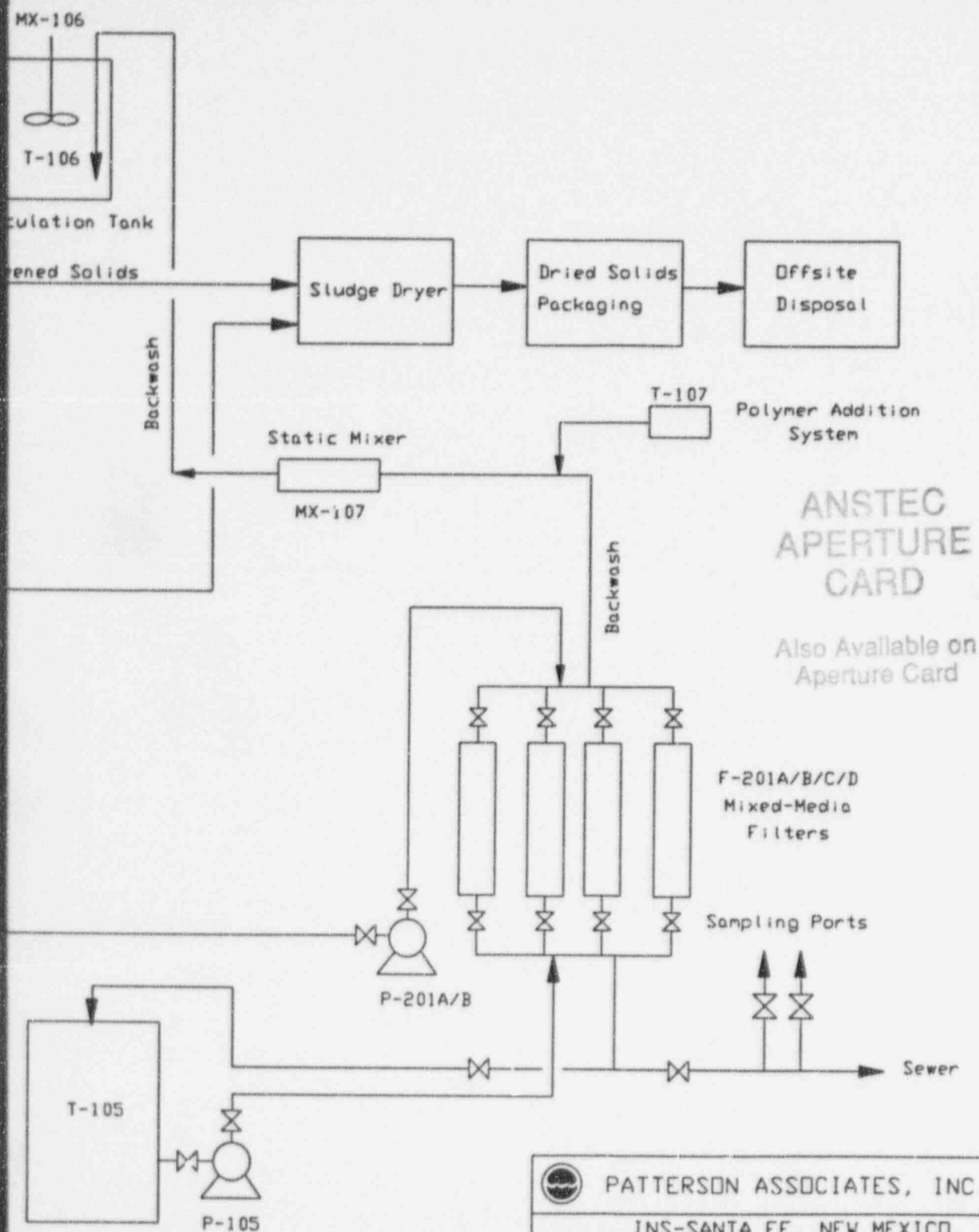
9702140125 - 01



T-104C
To be demolished

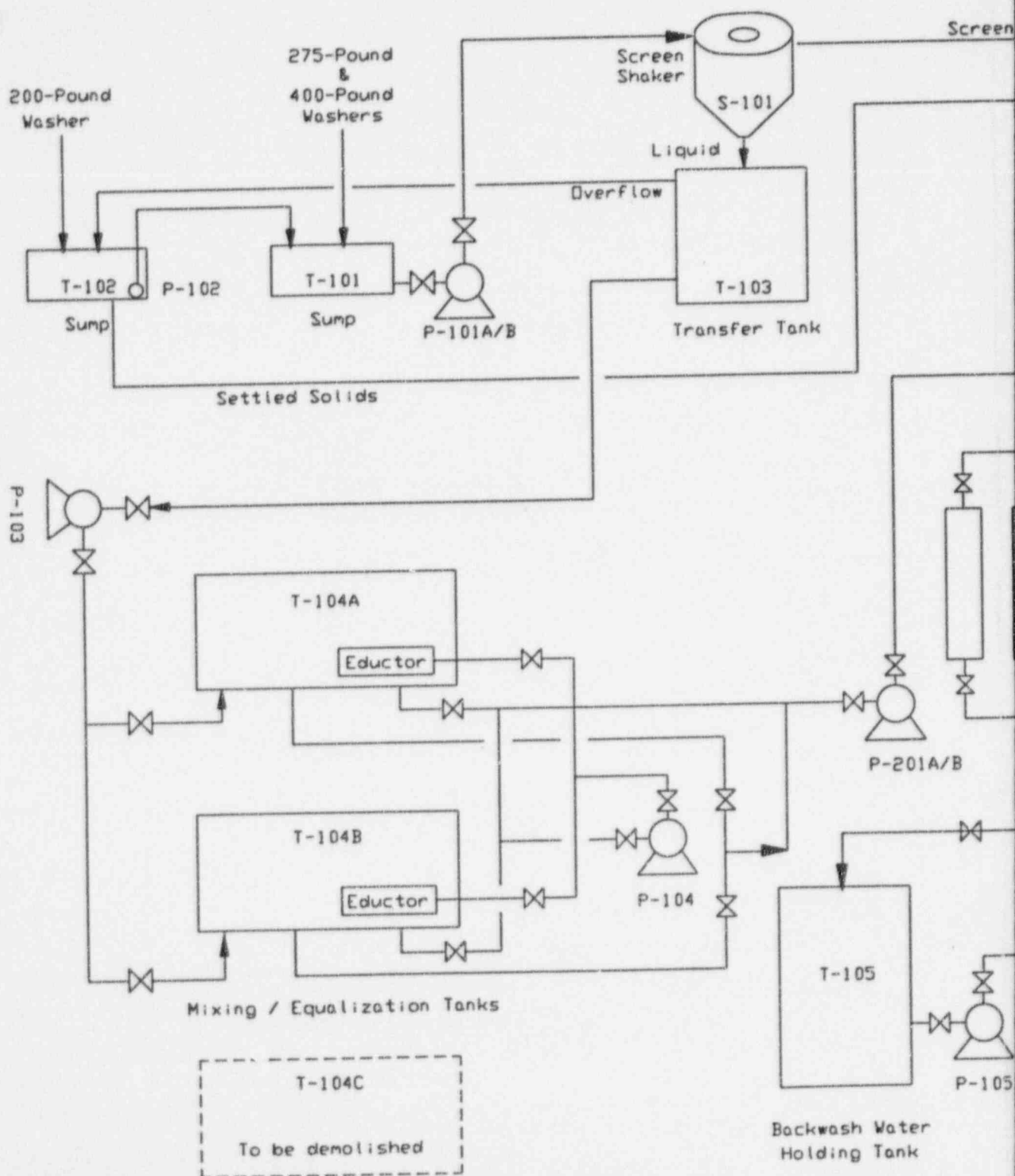
Phase 1

DRAFT



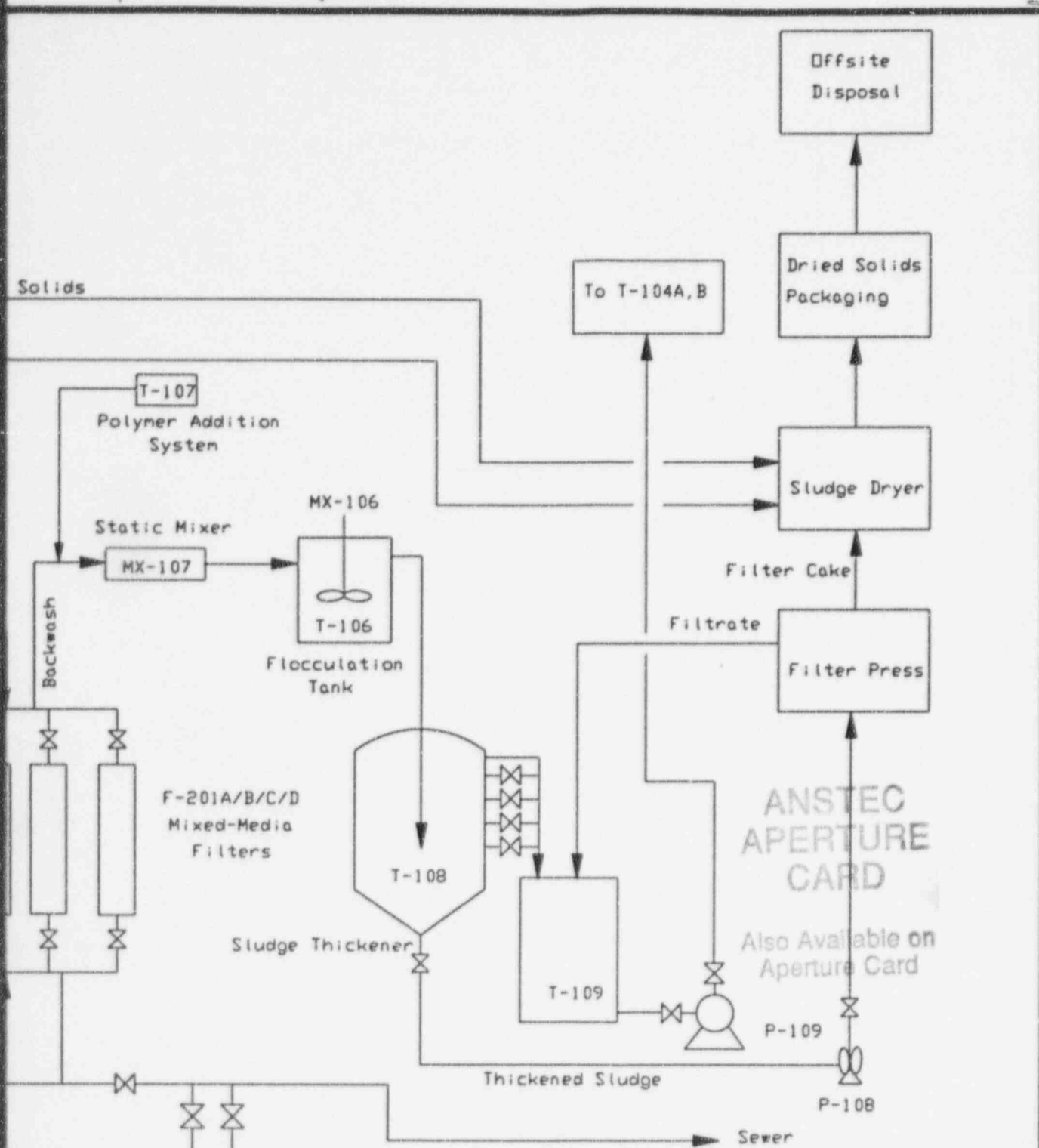
PATTERSON ASSOCIATES, INC.	
INS-SANTA FE, NEW MEXICO WASTEWATER TREATMENT SYSTEM SCHEMATIC (PHASE 1)	
DATE: 09/06/96	SCALE: None
REV. DATE: 10/18/96	Disk No: 2
FILE ID: 629WWT1.DWG	PROJECT: 960029
TECH. COORD: C. PETROPOULOU	DWG No: WWT5-01

9702140125-02



Phase II

DRAFT



ANSTEC
APERTURE
CARD

Also Available on
Aperture Card

PATTERSON ASSOCIATES, INC.	
INS-SANTA FE, NEW MEXICO WASTEWATER TREATMENT SYSTEM SCHEMATIC (PHASE II)	
DATE: 09/06/96	SCALE: None
REV. DATE: 10/18/96	Disk No: 2
FILE ID: 629WWT2.DWG	PROJECT: 960029
TECH. COORD: C. PETROPOULOU	DWG No: WWT5-02

9702140125-03

MECHANICAL EQUIPMENT SYMBOLS



OPEN TOP TANK



CLOSED TOP TANK



PRESSURE VESSEL



FLOATING ROOF TANK



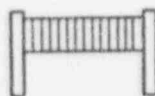
THICKENER



SCREEN SHAKER



SUMP



FILTER PRESS



OBSERVATION PORT ON TANK



HORIZONTAL CENTRIFUGAL PUMP



IN-LINE PROCESS PUMP



METERING PUMP



DIAPHRAGM PUMP



CENTRIFUGAL BLOWER



FLOCCULATOR OR MIXER



SIDE ENTRY MIXER



STATIC MIXER



SAFETY SHOWER/EYEWASH STATION



CIRCULATING TANK EDUCTOR (CTE)



DRYER



LIGHT FOR OBSERVATION PORT ON TANK

PIPE LINE DESIGNATION

NOMINAL PIPE SIZE

MATERIAL

4" 304 S.S. - 01

VALVE SYMBOLS

DRG GLOBE

DRG GATE

DRG BALL

DRG PLUG

DRG CHECK

DRG BUTTERFLY

DRG CAR SEALED OPEN

DRG CAR SEALED CLOSED

DRG PRE

PIPING COMPONENTS SYMBOLS

MAGNETIC FLOW METER

CONCENTRIC REDUCER

ECCENTRIC REDUCER

SPRAY NOZZLE

MANWAY OR NOZZLE

RUPTURE DISC

DRAIN HUB

DRYER

CALIBRATION CYLINDER

TIE POINT

EQUIPMENT SCHEDULE

VESSEL DESIGNATION	DESCRIPTION	STATUS	PUMP&MIXER DESIGNATION	DESCRIPTION
SUMP T-101	WASTEWATER COLLECTION SUMP	EXISTING, CONCRETE	PUMP P-101A	WASTEWATER TRANSFER SUMP PUMP
SUMP T-102	WASTEWATER COLLECTION SUMP	EXISTING, CONCRETE	PUMP P-101B	WASTEWATER TRANSFER SUMP PUMP
TANK T-103	WASTEWATER TRANSFER TANK	EXISTING, S.S.	PUMP P-102	WASTEWATER TRANSFER SUMP PUMP
TANK T-104A	WASTEWATER EQUALIZATION TANK	EXISTING, C.S.	PUMP P-103	WASTEWATER TRANSFER PUMP
TANK T-104B	WASTEWATER EQUALIZATION TANK	EXISTING, C.S.	PUMP P-104	T-104 TANK RECIRCULATION PUMP
TANK T-105	BACKWASH WATER HOLDING TANK	NEW	PUMP P-105	BACKWASH FEED PUMP
TANK T-106	FLOCCULATION TANK	NEW	PUMP P-107	POLYMER ADDITION PUMP
TANK T-107	POLYMER ADDITION SYSTEM	NEW	PUMP P-108	FILTER PRESS FEED PUMP
TANK T-108	SLUDGE THICKENER	NEW	PUMP P-109	WASTEWATER TRANSFER PUMP
TANK T-109	WASTEWATER TRANSFER TANK	NEW	PUMP P-201A	FILTER FEED PUMP
UNIT S-101	SHAKER SCREEN	EXISTING	PUMP P-201B	FILTER FEED PUMP
UNIT S-102	AUTOMATIC COMPOSITE SAMPLER	NEW	PUMP P-202	FILTER RECIRCULATION PUMP
UNIT F-201	MIXED-MEDIA FILTERS	EXISTING	MIXER MX-106	FLOCCULATION TANK MIXER
UNIT F-202	FILTER PRESS	NEW	MIXER MX-107	STATIC MIXER
UNIT D-101	SLUDGE DRYER	NEW		

DRAFT

SEQUENTIAL LINE NUMBER

W/ SOLENOID

OPER. BALL VALVE

VALVE W/ ACTUATOR

VALVE W/ ACTUATOR

W/ SOLENOID

W/ SOLENOID

PRESSURE RELIEF

FLANGE JOINT

SIGNAL CENTER

TER

UP

CHANGE CONNECTION
POINTS OR SPEC.
ANGES)

ER

SIGNAL DAMPENER

BURNER

METER








DIAPHRAGM SEAL

E CONNECTION





STATUS

EXISTING, CENTRIFUGAL
NEW, CENTRIFUGAL
EXISTING, SUBMERSIBLE
EXISTING, CENTRIFUGAL
NEW, CENTRIFUGAL
NEW, METERING
NEW, DIAPHRAGM
NEW, CENTRIFUGAL
EXISTING, CENTRIFUGAL
EXISTING, CENTRIFUGAL
NEW, CENTRIFUGAL
NEW, TOP ENTRY
EXISTING



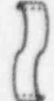
INSTRUMENT MOUNTING SYMBOLS

-  LOCALLY MOUNTED
-  MOUNTED ON PANEL BOARD
-  MOUNTED BEHIND PANEL BOARD
-  SHARED DISPLAY (CRT)
-  SHARED DISPLAY (NOT ACCESSIBLE TO OPERATOR)
-  FIELD PANEL MOUNTED
-  INTERLOCK TO PLC OR RELAY LOGIC

INSTRUMENT SIGNAL SYMBOLS

-  CONNECTION TO PROCESS OR MECHANICAL LINK
-  PNEUMATIC
-  ELECTRICAL
-  FILLED CAPILLARY

INSULATION DESIGNATION

-  PIPE LINE INSULATION
-  PIPE LINE HEAT TRACE AND INSULATION
-  TANK INSULATION

INSTRUMENT LETTER SYMBOLS IDENTIFICATION

	FIRST-LETTER		SUCCEEDING-LETTER		
	MEASURED OR INITIATING VARIABLE	MODIFIER	READOUT OR PASSIVE FUNCTION	OUTPUT FUNCTIONS	MODIFIER
A	ANALYSIS		ALARM		
B	BURNER, COMBUSTION		USER'S CHOICE	USER'S CHOICE	USER'S CHOICE
C	USER'S CHOICE			CONTROL	
D	USER'S CHOICE	DIFFERENTIAL			
E	VOLTAGE		SENSOR (PRIMARY ELEMENT)		
F	FLOW RATE	RATIO (FRACTION)			
G	USER'S RATE		GLASS, VIEWING DEVICE	CONTROL STATION	
H	HAND				HIGH
I	CURRENT (ELEC.)		INDICATE		
J	POWER	SCAN			
K	TIME, TIME SCHEDULE	TIME RATE OF CHANGE			
L	LEVEL		LIGHT		LOW
M	USER'S CHOICE	MOMENTARY			MIDDLE, INTERMEDIATE
N	USER'S CHOICE		USER'S CHOICE	USER'S CHOICE	USER'S CHOICE
O	USER'S CHOICE		ORIFICE, RESTRICTION		
P	PRESSURE, VACUUM		POINT (TEST) CONNECTION		
Q	QUANTITY	INTEGRATE, TOTALIZE			
R	RADIATION		RECORD		
S	SPEED, FREQUENCY	SAFETY		SWITCH	
T	TEMPERATURE			TRANSMIT	
U	MULTIVARIABLE		MULTIFUNCTION	MULTIFUNCTION	MULTIFUNCTION
V	VIBRATION, MECHANICAL ANALYSIS			VALVE, DAMPER, LOUVER	
W	WEIGHT, FORCE		WELL		
X	ON - OFF	X AXIS	UNCLASSIFIED	UNCLASSIFIED	UNCLASSIFIED
Y	EVENT, STATE OR PRESENCE	Y AXIS		RELAY, COMPUTER, CONVERT	
Z	POSITION, DIMENSION	Z AXIS		DRIVER, ACTUATOR, UNCLASSIFIED FINAL CONTROL ELEMENT	

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Also Available on
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PATTERSON ASSOCIATES, INC.	
INS - SANTA FE	
WASTEWATER TREATMENT SYSTEM	
PROCESS & INSTRUMENTATION DIAGRAM-01	
DATE: 10/02/96	SCALE: NONE
REV DATE: 10/18/96	DISK No: C:
FILE ID: 629PID01	PROJECT: 960029
TECH. COORD: C. PETROPOULOU	DWG. No: P&ID-01

9702140125-04

T-102

WASTEWATER COLLECTION SUMP (existing)

No. of Units: 1
Size: 1'-8" x 4'-3" x 3' SVD, 1'-6" FBD
Volume: 160 Gal. V.V.
Mat'l of Constr.: C.S.

T-101

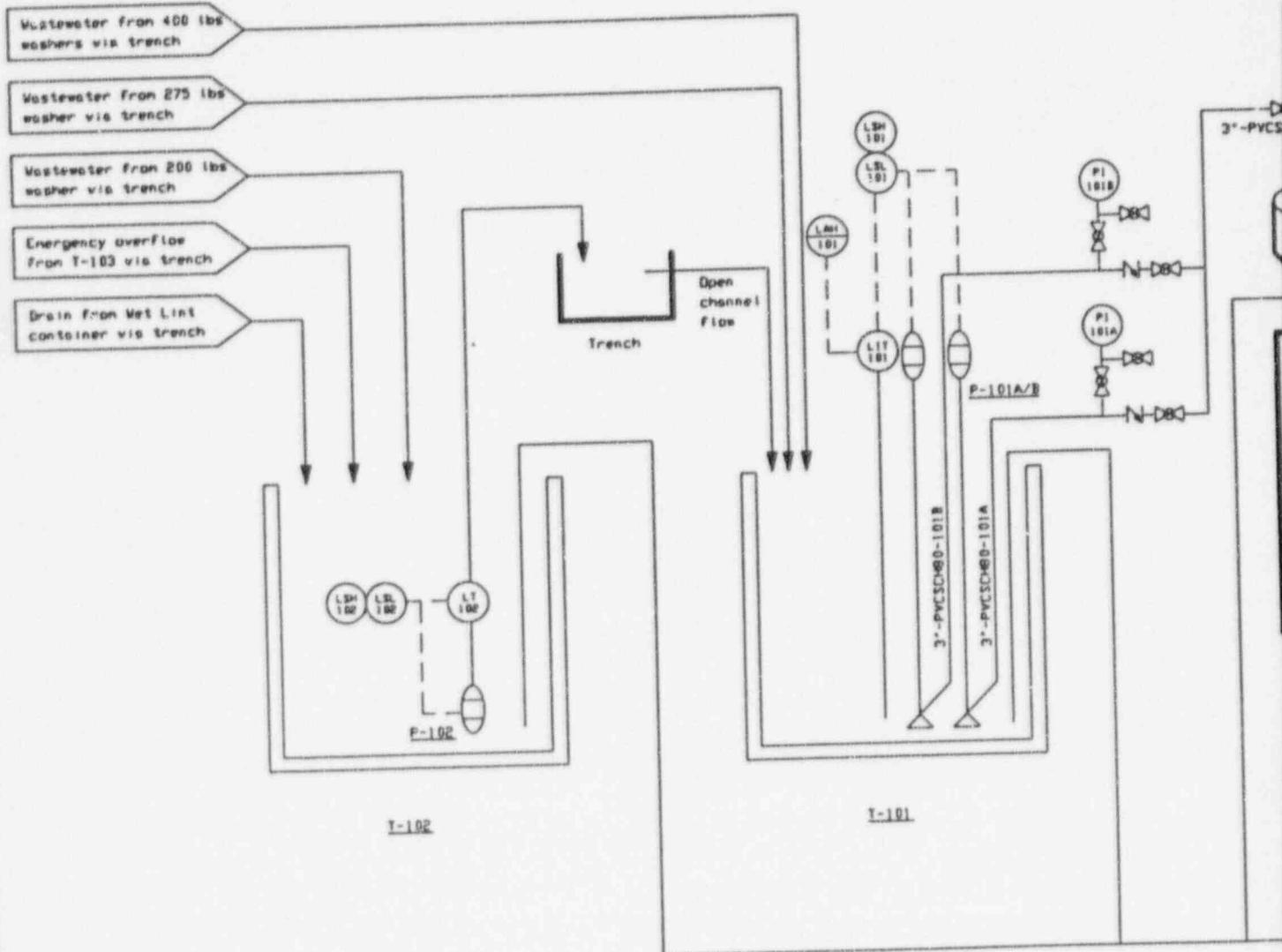
WASTEWATER COLLECTION SUMP (existing)

No. of Units: 1
Size: 1' x 7' x 4'-6" SVD, 1'-6" FBD
Volume: 1,600 Gal. V.V.
Mat'l of Constr.: C.S.

T-103

TRANSFER TANK

No. of Units: 1
Size: 8' x 8' x 4'
Volume: 330
Mat'l of Constr.: C.S.



P-102

WASTEWATER TRANSFER SUMP PUMP (existing)

No. of Units: 1
Type: Submersible
Capacity:
Mat'l of Constr.:
Drive: IHP

P-101A/B

WASTEWATER TRANSFER SUMP PUMPS (1 existing)

No. of Units: 2
Type: Centrifugal
Capacity:
Mat'l of Constr.:
Drive: SHP

DRAFT

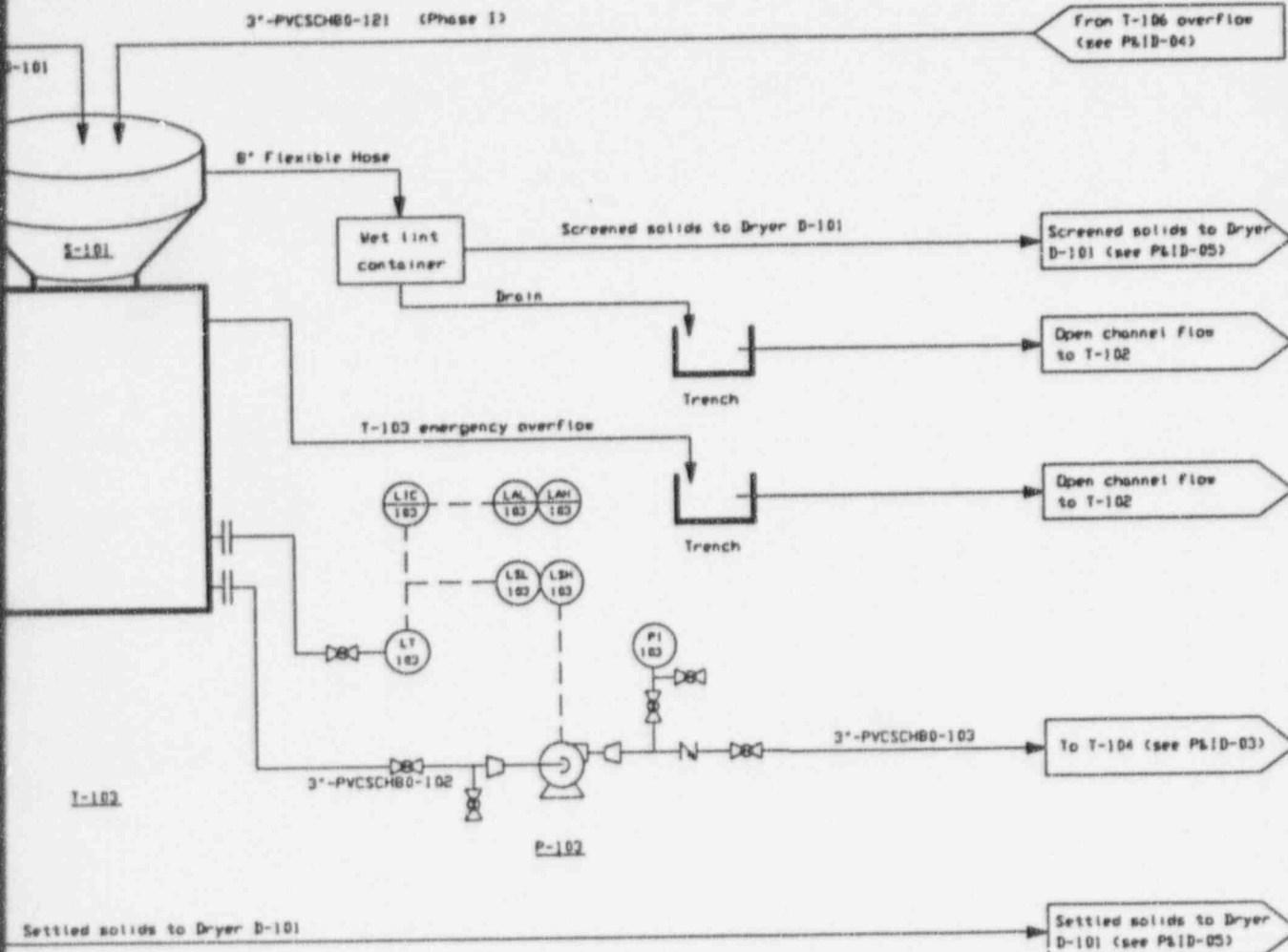
(existing)

1
-6" SVD, 1'-6" BD
V.V.
S.S.

S-101

SCREEN SHAKER (existing)

No. of Units: 1
Size: 64" Screen, self-clean assembly
Screen Size: 44 um
Drive: 2.5 HP



P-102

WASTEWATER TRANSFER PUMP (existing)

No. of Units: 1
Type: Centrifugal
Capacity:
Mat'l of Constr.:
Drive:

ANSTEC
APERTURE
CARD

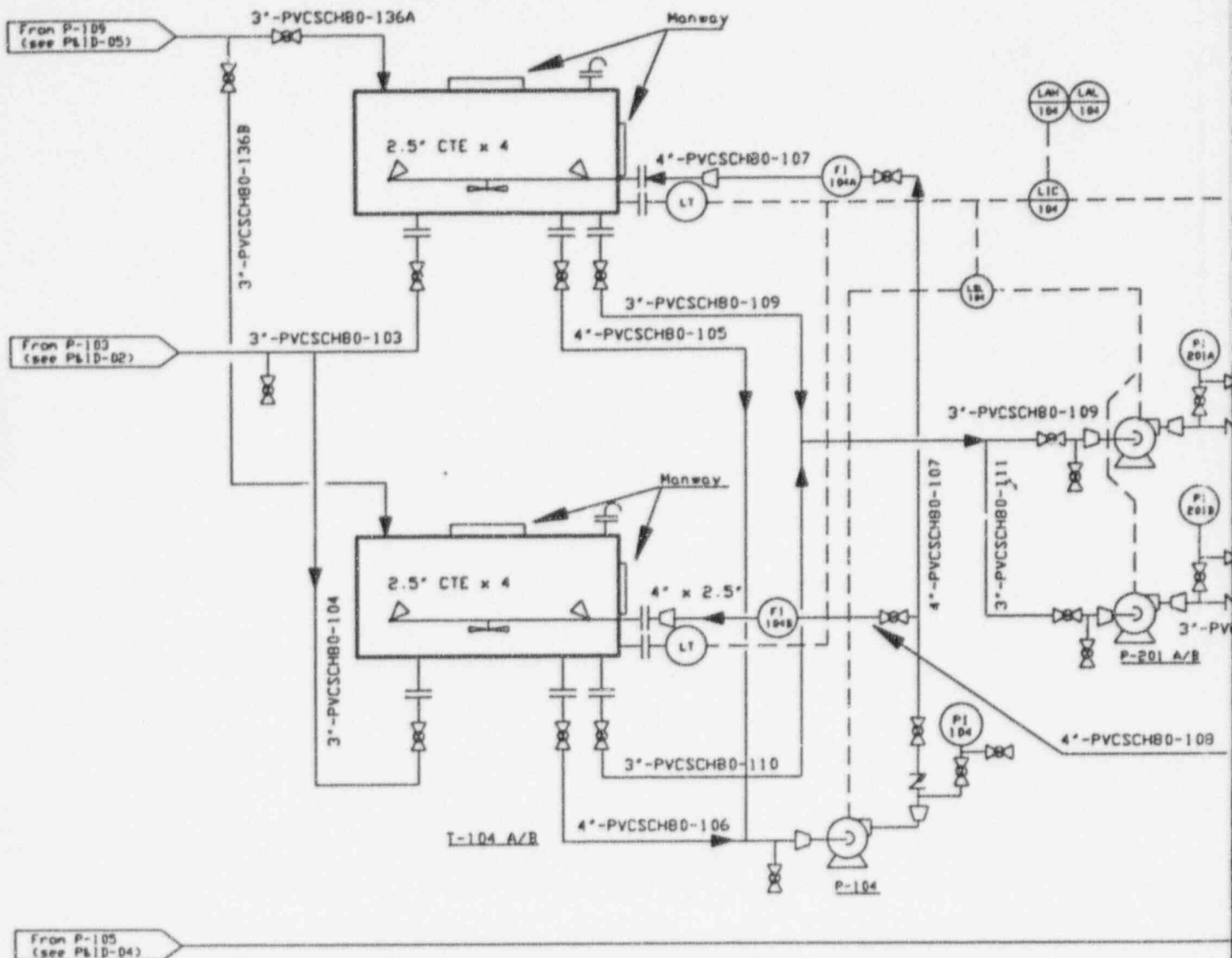
Also Available on
Aperture Card

PATTERSON ASSOCIATES, INC.	
INS - SANTA FE	
WASTEWATER TREATMENT SYSTEM	
PROCESS & INSTRUMENTATION DIAGRAM-02	
DATE: 10/02/96	SCALE: NONE
REV DATE: 10/18/96	DISK No: 2
FILE ID: 629PID02.DWG	PROJECT: 960029
TECH. COORD: C. PETROPOULOU	DWG. No: PID-02

9702140125-05

T-104 A/B
MIXING/ EQUALIZATION TANKS (existing)

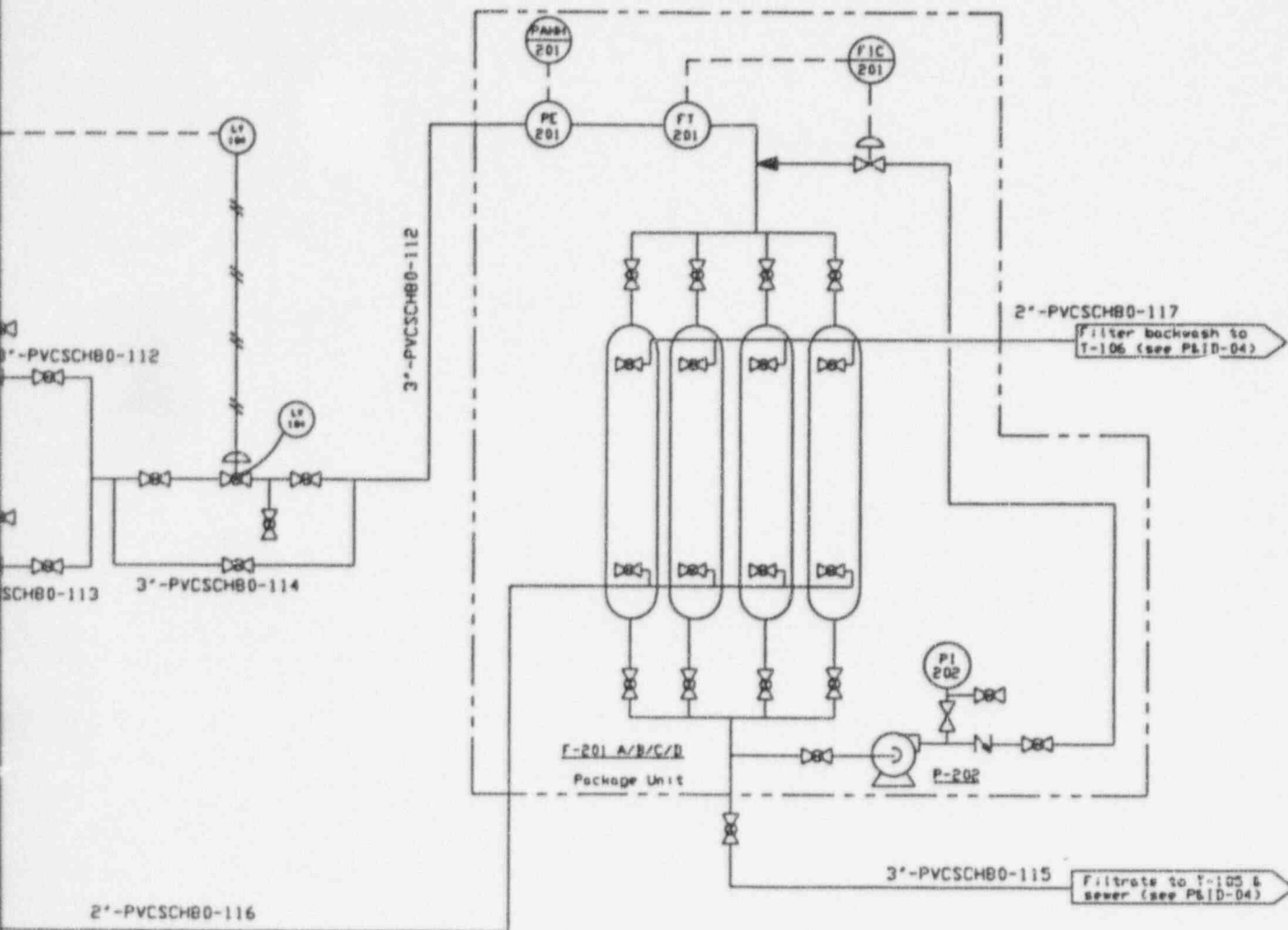
No. of Units: 2
 Size: ϕ 8' x 22' (horizontal)
 Volume: 8000 Gal. V.V.
 Mat'l of Constr.: C.S.



P-104
T-104 TANK RECIRCULATION PUMP
 No. of Units: 1
 Type: Centrifugal
 Capacity: 360 GPM @ 85' TDH
 Mat'l of Constr.:
 Drive: 20 HP

P-201 A/B
FILTER FEED P
 No. of Units:
 Type: Centrif
 Capacity: 100
 Mat'l of Cons
 Drive: 7.5 HP

F-201 A/B/C/D
MIXED-MEDIA FILTERS (existing)
 No. of Units: 4
 Type of Media: Natural quartz silica
 Flowrate: 100 GPM
 Max Inlet Pressure: 85 PSIG
 Max Working Pressure: 100 PSIG



MPS (existing)

100
 GPM @
 100

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P-202
FILTER RECIRCULATION PUMP
 No. of Units: 1
 Type: Centrifugal
 Capacity:
 Mat'l of Constr.:
 Drive:

PATTERSON ASSOCIATES, INC.	
INS - SANTA FE	
WASTEWATER TREATMENT SYSTEM	
PROCESS & INSTRUMENTATION DIAGRAM-03	
DATE: 10/02/96	SCALE: NONE
REV DATE: 10/18/96	DISK No: 2
FILE ID: 629P1D03.DWG	PROJECT: 960019
TECH. COORD: C. PETROPOULOS	DWG. No: P&ID-03

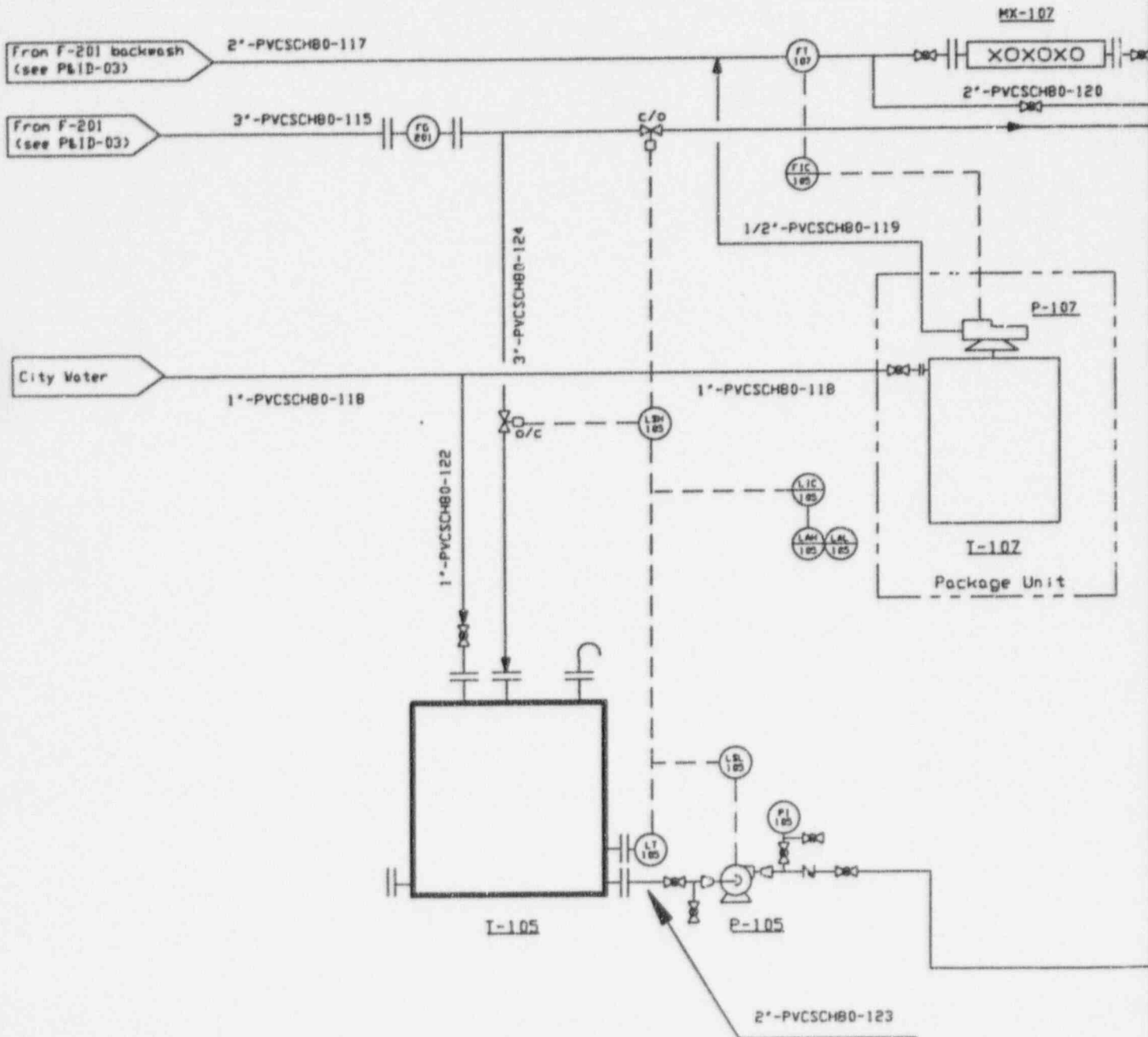
9702140125-06

T-105BACKWASH WATER HOLDING TANK

No. of Units: 1
 Size: 5'-6" f x 7' SVD, 2' FBD
 Volume: 1,200 Gal. V.V.
 Mat'l of Constr.: TBD

T-107POLYMER ADDITION SYSTEM

No. of Units: 1
 Type: TBD

P-105BACKWASH FEED PUMP

No. of Units: 1
 Type: Centrifugal
 Capacity: 240 GPM @ 160' TDH
 Mat'l of Constr.:
 Drive: 1.5 HP

P-107POLYMER ADDITION PUMP

No. of Units: 1
 Type: Metering pump
 Capacity: TBD
 Mat'l of Constr.: TBD
 Drive: TBD

MX-107STAT

No. of
 Type
 Size

1. 26

ATTENTION TANK

Units: 1

4' x 4' SVD, 1' FBD

450 Gal. V.V.

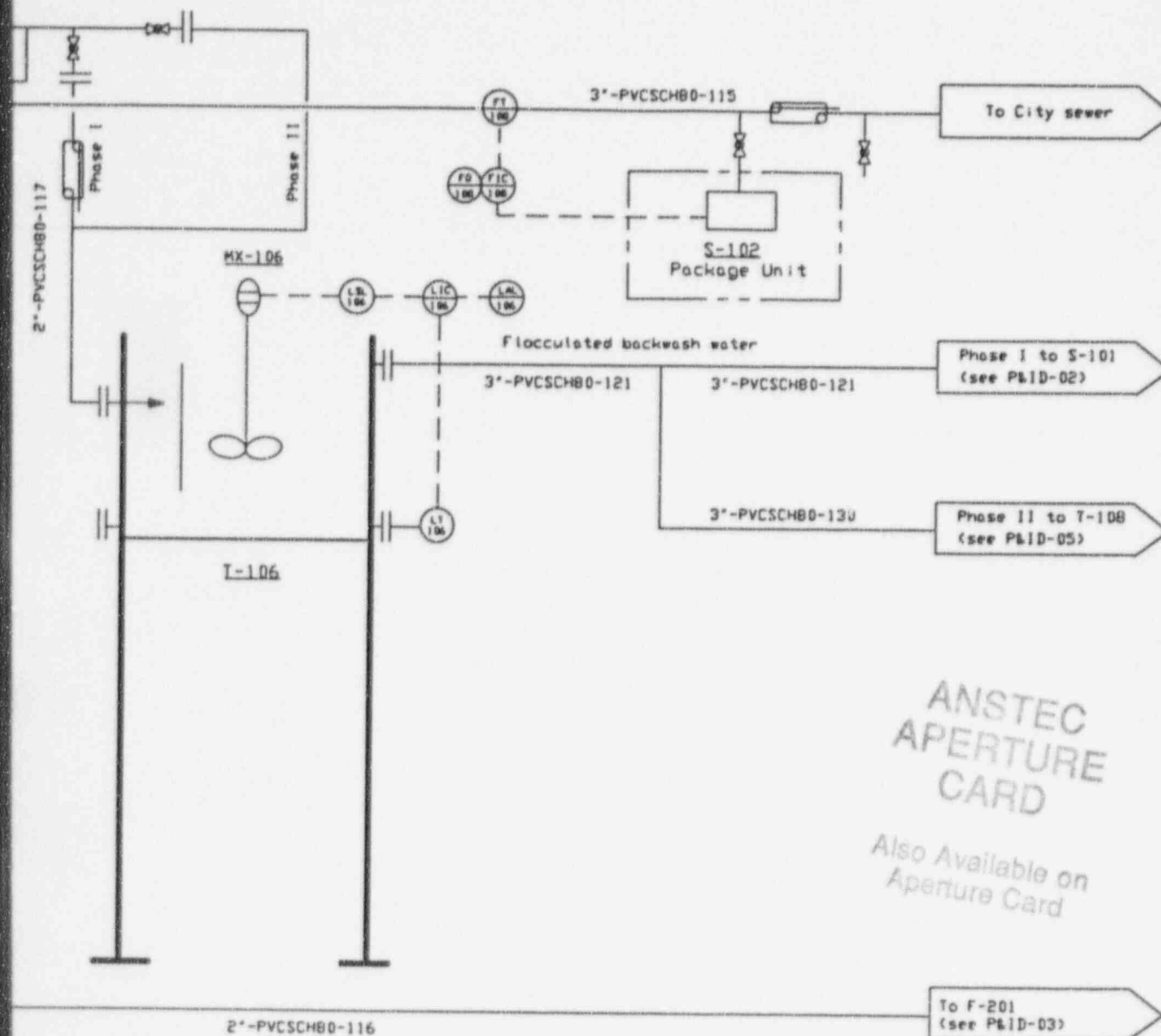
of Constr.: TBD

S-102

AUTOMATIC COMPOSITE SAMPLER

No. of Units: 1

Type: TBD



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9702/40125-07

T-108

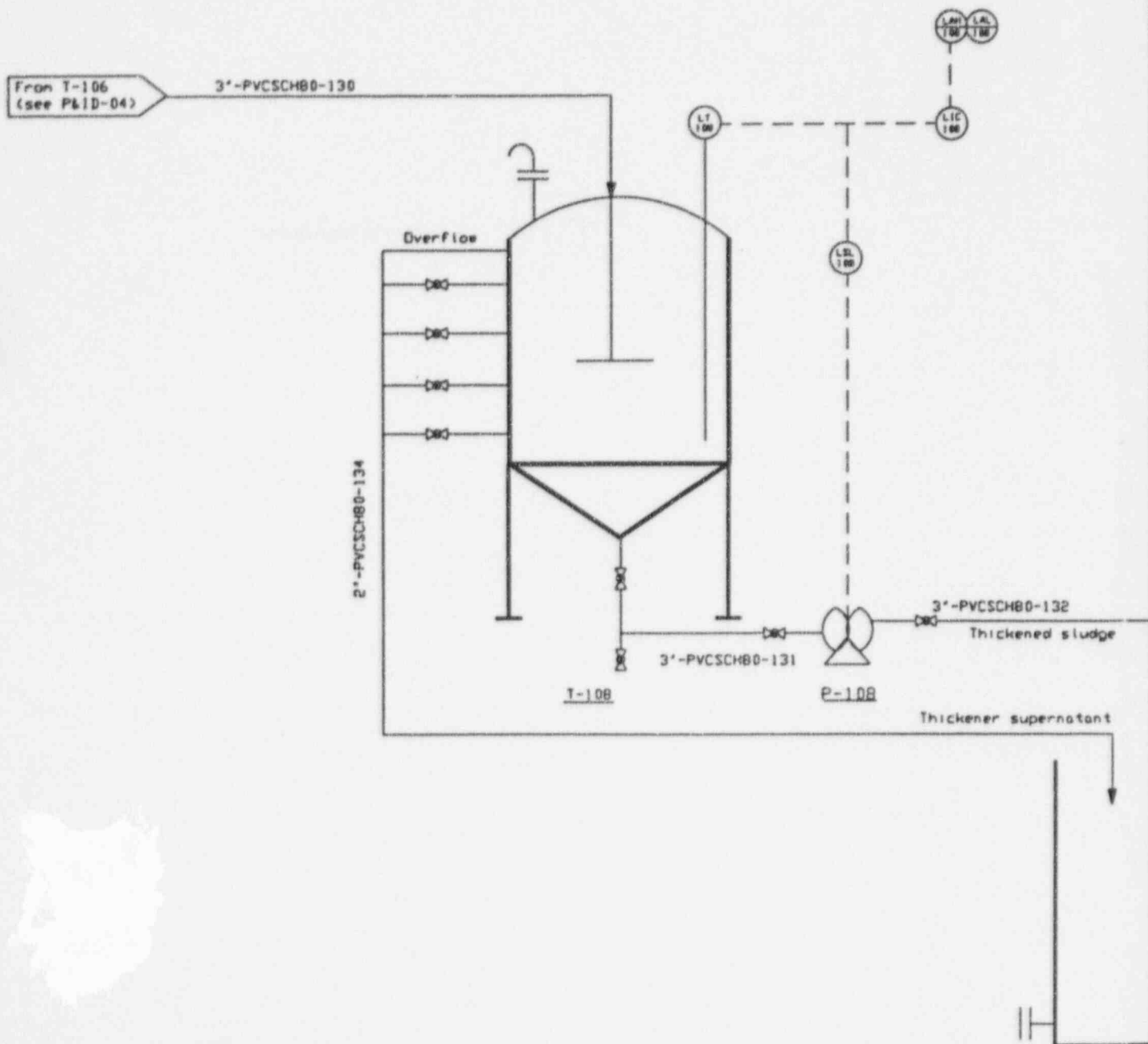
SLUDGE THICKENER

No. of Units: 1
Size: 8' x 10 SWD, 2' FBD
Volume: 3,750 Gal. W.V.
Mat'l of Constr.: TBD

T-109

WASTEWATER TREATMENT

No. of Units: 1
Size: 6' x 6 SWD
Volume: 1,200 Gal. W.V.
Mat'l of Constr.: TBD



P-108

FILTER PRESS FEED PUMP

No. of Units: 1
Type: Diaphragm
Capacity: to be specified
Mat'l of Constr.:
Drive: to be specified

DRAFT

TRANSFER TANK

2' FBD
S. V.V.
TBD

F-202

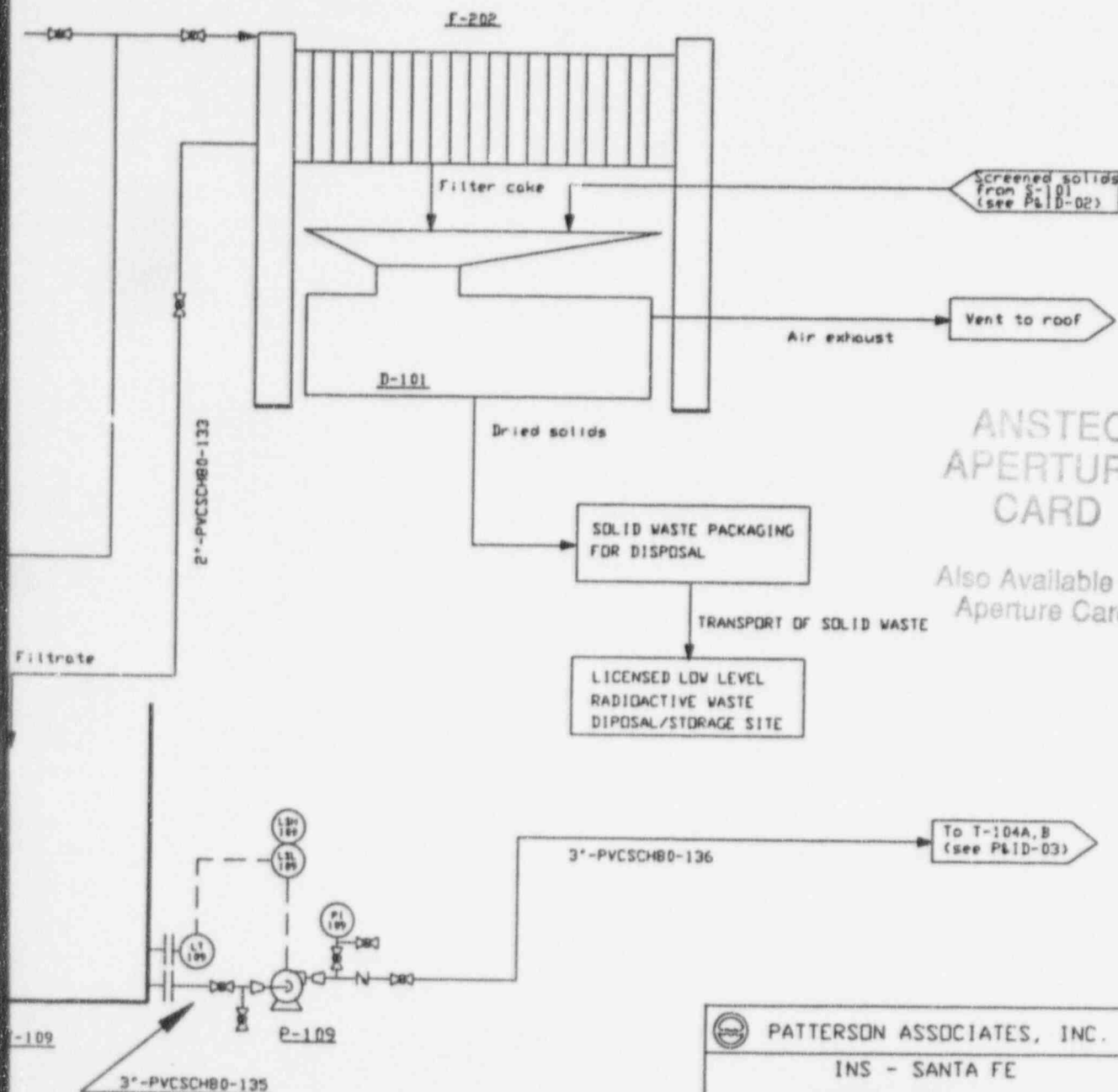
FILTER PRESS

No. of Units: 1
Type: Plate & frame
Size: 4.0 Ft²

D-101

SLUDGE DRYER

No. of Units: 1
Type: TBD



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P-109
WASTEWATER TRANSFER PUMP
No. of Units: 1
Type: Centrifugal
Capacity: to be specified
Mat'l of Constr.:
Drive: to be specified

PATTERSON ASSOCIATES, INC.	
INS - SANTA FE	
WASTEWATER TREATMENT SYSTEM	
PROCESS & INSTRUMENTATION DIAGRAM-05	
DATE: 10/12/96	SCALE: NONE
REV DATE: 10/18/96	DISK No: 2
FILE ID: 629PID05.DWG	PROJECT: 960029
TECH. COORD: C. PETROPOULOU	DWG. No: P&ID-05

9702140125-08

Don.

[illegible]

Donald A. Cool

FAX INFORMATION

**U. S. NUCLEAR REGULATORY COMMISSION
OFFICE OF STATE PROGRAMS**

**STATE PROGRAMS FAX: (301) 415-3502
US NRC MAIN FAX: (301) 415-2260/1137/2259**

NUMBER OF PAGES: 3 including this page

DATE: February 5, 1997

TO: William Floyd, State of New Mexico

**FROM: Paul H. Lohaus, Deputy Director
Office of State Programs**

SUBJECT: Response to November 12, 1996 Letter

Attached is a copy of my February 5, 1997, letter responding to your November 12, 1996 letter. If you have any questions, please give me a call on 301-415-2326.

**cc:
PGuerreroortiz
CBalkany**

< TRANSACTION REPORT >

02-05-1997(WED) 17:13

[TRANSMIT]

NO.	DATE	TIME	DESTINATION STATION	PG.	DURATION	MODE	RESULT
30788	2-05	17:10	5058271544	3	0' 02' 15"	NORMAL	OK
<i>W. Hayd</i>				3	0' 02' 15"		

< TRANSACTION REPORT >

02-05-1997(WED) 17:00

[TRANSMIT]

NO.	DATE	TIME	DESTINATION STATION	PG.	DURATION	MODE	RESULT
30787	2-05	16:59	5059846627	3	0'01'38"	NORM.E	OK
			<i>Guerreerontj</i>	3	0'01'38"		

< TRANSACTION REPORT >

02-05-1997(WED) 17:18

[TRANSMIT]

NO.	DATE	TIME	DESTINATION STATION	PG.	DURATION	MODE	RESULT
30789	2-05	17:15	5059860997	3	0' 02' 24"	NORMAL	OK
			<i>C. Balkony</i>	3	0' 02' 24"		