STATE OF NEVADA
DIVISION OF WATER RESOURCES
WELL DRILLER'S REPORT

OFFICE USE ONLY
Log No. 109173
Permit No.
Basin

*PRINT OR TYPE ONLY
DO NOT WRITE ON BACK

Please complete this form in its entirety in accordance with NRS 534.170 and NAC 534.340

NOTICE OF INTENT NO. 32197

1. OWNER TRONOX LLC
MAILING ADDRESS Po Box 55 HENDERSON NV 89009
ADDRESS AT WELL LOCATION SOFWARM SPRINGS RD and E of FOURTH ST
Subdivision Name: County: Clark

2. LOCATION SW ¼ SE ¼ Sec 12 T 22 N/S R 62 E
PERMIT/WAIVER No. H000539 | 178 12 801 001
Issued by Water Resources Parcel No.
Latitude 36.02.34.32 N UTM E ☐ NAD 27
Longitude 114.59 53.80 N ☒ NAD 83/WGS 84

3. WORKED PERFORMED
☒ New Well ☐ Replace ☐ Recondition
☐ Deepen ☐ Other

4. PROPOSED USE
☐ Domestic ☐ Irrigation ☐ Test
☐ Municipal/Industrial ☒ Monitor ☐ Stock

5. WELL TYPE
☐ Cable ☐ Rotary ☐ RVC
☐ Air ☒ Other Sonic

6. LITHOLOGIC LOG

Material	Water Strata	From	To	Thickness
attached Lag				

Date started: 10-24, 20 09
Date completed: 10-24, 20 09

7. Water Level
Static water level: 42 feet below land surface
Artesian Flow: G.P.M. P.S.I.
Water Temperature: °F
Quality:

8. WELL TEST DATA
TEST METHOD: ☐ Bailer ☐ Pump ☐ Air Lift

G.P.M.	Draw Down (Feet Below Static)	Time (Hours)

9. WELL CONSTRUCTION
Depth Drilled 47 Feet Depth Cased 47 Feet

HOLE DIAMETER (BIT SIZE)

		From		To	
6 3/4	Inches	0	Feet	47	Feet
	Inches		Feet		Feet
	Inches		Feet		Feet

CASING SCHEDULE

Size O.D. (Inches)	Weight/Ft. (Pounds)	Wall Thickness (Inches)	From (Feet)	To (Feet)
2"	PVC	SCH 40	0	47

Perforations:
Type of perforation Screen Slot
Size of perforation 0.01
From 32 feet to 47 feet
From feet to feet
From feet to feet
From feet to feet
From feet to feet

Annular Seal: ☐ Yes ☐ No
☒ Neat Cement 2 to 27 ☐ Pumped ☒ Poured
☐ Cement Grout to ☐ Pumped ☐ Poured
☒ Concrete Grout 0 to 2' ☐ Pumped ☒ Poured
☐ =30% Bentonite Grout to ☐ Pumped ☐ Poured
Gravel Pack: ☒ Yes ☐ No 30 to 47 ☐ Pumped ☒ Poured
Type: 2/12 Silver Sand
Bentonite Chips: ☒ Yes ☐ No 27 to 30 ☐ Pumped ☒ Poured
Type: 3/8 Hole Plug

10. DRILLER'S CERTIFICATION
This well was drilled under my supervision and the report is true to the best of my knowledge.
Name Eagle Drilling
Contractor
Address 7150 Black Street
Contractor
Las Vegas NV 89119
Nevada contractor's license number issued by the State Contractor's Board 51266
Nevada driller's license number issued by the Division of Water Resources, the on-site driller 2097
Signed [signature]
By driller performing actual drilling on site or contractor
Date 11-2-09

(Rev. 05-08)

USE ADDITIONAL SHEETS IF NECESSARY

GES	Job Name: Tronox Phase B	Boring No. M-122

Job No. 20092518V1	Start: 10-24-09	Location: See fig. 2
	End: 10-24-09	
Total Depth:	Groundwater	Comments: Air knifed to 5'

Elevation:	Depth:	
	Date:	
	Time:	

Equipment: SDC 550-24	Type of Bit: 6¼"
Hammer (lbs/inches): 140 #/30"	Driller: Thompson
Surface Condition: Asphalt	Logger: Ferringer

Surface Dry Density (pcf):		Surface Moisture Content (%):

Depth (feet)	REC	Sample Type	Blows/ 6 Inches	USCS	Description	Pene-trometer	Depth (feet)
					Asphalt		
1				FILL SW	FILL: SAND; Reddish brown (5YR 4/3) dry, loose, trace gravel ≤ 1.5" ~~angular~~ subrounded sub-angular, 15% coarse sub-rounded sand, 85% fine-med sand, no plasticity, moderate HCl rxn.		1
2	4.5'						2
3							3
4							4
5							5
6							6
7	4'						7
8							8
9							9
10							10
11				SW	SAND: Brown (7.5YR 4/4), Soft, dry, 5% fine to coarse subangular volcanic gravel, 20% coarse subrounded sand, 75%		11
12							12

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GES	Job Name: Tronox Phase B	Boring No. M-122
Job No. 200975188V1	Start: 10-24-09 / End: 10-24-09	Location: See fig. 2

Depth (feet)	REC	Sample Type	Blows/ 6 inches	USCS	Description	Pene-trometer	Depth (feet)
					fine - medium sub-rounded		
13					sand, moderate HCl rxn.,		13
	3'				no plasticity, # debris		
14					from abandon utilities @ 11.5'		14
15					...gravel to 3%, several		15
					angular basalt cobbles ~		
16				SW	3.5 - 4" in diameter,		16
					trace caliche nodules ~.75-		
17					1.5" diameter w/ calcite cement		17
	5'						
18							18
19							19
20					SAND: Yellowish red (5YR 6/6),		20
				SW	soft, dry, trace gravel ~ .25-		
21					1.0" diameter subrounded - sub-		21
					angular volcanic, 15% coarse		
22					subrounded sand, 85% v. fine-		22
	5'				medium sand, moderate to		
23					strong HCl rxn., no plasticity		23
24							24
					... 24' - 25' small calcitified		
25				SW	zones, gypsum cement, mod-		25
					strongly cemented		
26							26
27							27
28							28

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GES	Job Name: Tronox Phase B	Boring No. M-122
Job No. 20092518U1	Start: 10-24-09 / End: 10-24-09	Location: See fig. 2

Depth (feet)	REC	Sample Type	Blows/ 6 inches	USCS	Description	Pene-trometer	Depth (feet)
					... large ~5-6" diameter		
29					sub-angular ~~vitrophyre~~ vitrophyre		29
	4.8'			SW	cobbles, $CaCO_3$ coating		
30							30
					... gravel to 15%, fine to		
31					coarse, up to ~2" diameter,		31
					sub-rounded to sub-angular,		
32					volcanic origin (vitrophyre)		32
33					... volcanic cobble ~6" diameter		33
	4.75'						
34							34
35				SW	SAND: Reddish Brown (5YR 4/3),		35
					soft, dry to damp, 5% fine to		
36					coarse sub-angular volcanic		36
					gravel, 35% coarse sub-		
37					rounded sand, 60% v. fine-		37
					medium sand, strong HCl		
38	5'				rxn. no plasticity,		38
39				SM	MUDDY CREEK FORMATION: Abrupt Contact		39
					Silty SAND: Brown (7.5YR 4/4)		
40					40% silt, 50% v. fine sand,		40
					10% fine sand, cemented		
41					zones @ 39-40', strong HCl		41
					rxn, cement is $CaCO_3$, low		
42				▽	plasticity		42
43							43
44							44

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GES	Job Name: Tranex Phase B	Boring No. M-122
Job No. 2009 2518 V1	Start: 10-24-09 / End: 10-24-09	Location: See fig. 2

Depth (feet)	REC	Sample Type	Blows/ 6 inches	USCS	Description	Pene-trometer	Depth (feet)
45 29							29
				SM	Silty Sand: Brown (7.5YR 5/1)		
46 30					40% silt, 45% v. fine sand,		30
					15% fine sand, low - moderate		
47 31					plasticity, no HCl rxn., stiff,		31
					moist - wet		
48 32							32
					TD @ 47' BGS		
49 33							33
50 34							34
51 35							35
52 36							36
53 37							37
54 38							38
55 39							39
56 40							40
57 41							41
58 42							42
59 43							43
60 44							44

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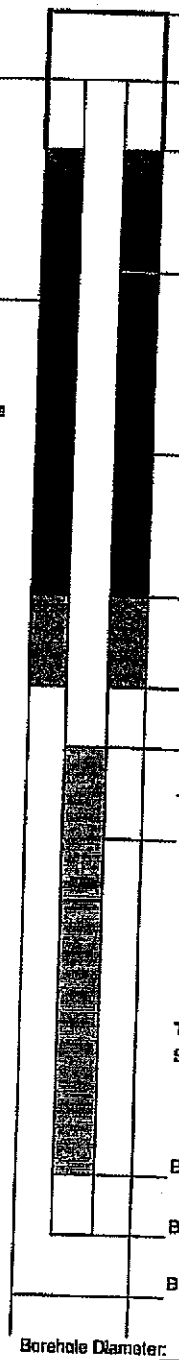
ENSR	Client: Tronox LLC.	WELL ID: M-122
	Project Number: 20092518 01	
	Site Location: Henderson	Date Installed: 10-24-09
	Well Location: Tronox Area 3 Coords:	Inspector:
	Method: Sonic	Contractor: GES / Eagle

MONITORING WELL CONSTRUCTION DETAIL



	Depth from G.S. (feet)	Elevation (feet) Datum _____
Top of Steel Guard Pipe		
Top of Riser Pipe		
8" Flush Vault		
Ground Surface (G.S.)	0.0	
Bottom of Steel Guard Pipe		
Top of Bentonite	27	
Bentonite Seal Thickness 3		
Top of Sand	30	
Top of Screen	32	
▲ Stabilized Water Level		
Bottom of Screen	46' 9"	
Bottom of Tail Pipe:	47	
Bottom of Borehole	47	

Monitoring Point for Surveying & Water Levels

Cement, Bentonite, Bentonite Slurry Grout, or Native Materials

100 % Cement

_____ % Bentonite

_____ % Native Materials

Riser Pipe:
- Length 32
- Inside Diameter (ID) 2"
- Type of Material Sch. 40 PVC

Screen:
- Length 15
- Inside Diameter (ID) 2"
- Slot Size .010
- Type of Material PVC

Type/Size of Sand #2/12

Sand Pack Thickness _____

Borehole Diameter: 6 3/4"

Describe Measuring Point:

Approved:

Signature

Date 10-24-09