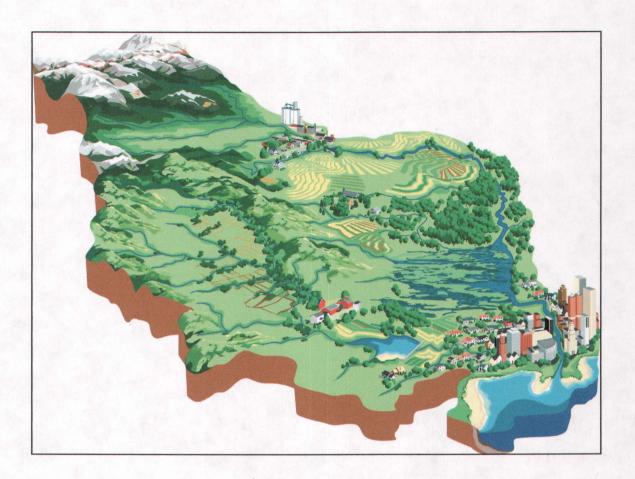
# WATERSHED ASSESSMENT FOR TRIBUTARIES TO THE TRUCKEE RIVER

# **APPENDIX**



Prepared for Washoe County Regional Water Planning Commission

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July 30, 2002

# APPENDICES TABLE OF CONTENTS

### STREAM ASSESSMENTS

(Sub-basin watersheds separated by colored paper, parenthesis denote number of assessments) Introduction to stream assessment procedure

## N. Carson, Verdi, Peavine creeks

Peavine Watershed Summary

Hunter

Alum (2)

Dog (2)

Sunrise

Chalk (2)

Unnamed

N. Truckee Drain (4)

Washoe Valley

**Ophir** 

Franktown (2)

Muskgrove (2)

Jumbo (2)

**South Truckee Meadows** 

Evans (3)

Dry (4)

Thomas (5)

Whites (7)

Jones (2)

Galena (4)

Browns

Bailey

## **CHEMISTRY**

(chemistry type separated by colored paper)

Introduction to chemistry sampling

## N. Truckee Drain graphs

(data from Truckee Meadows Water Reclamation Facility, Coordinated Monitoring Program)

## Routine domestic, coliform data from Autumn 2001

Thomas (3)

Whites (2)

Galena (3)

Dog

Hunter

Alum

Chalk (Fourth)

N. Truckee Drain (3)

**Boynton Slough** 

## Stormwater sampling, January 16, 2002

N. Truckee Drain Boynton Slough Thomas Evans

## Routine Domestic, coliform, Washoe Valley May, 2002

Franktown Ophir (2) Muskgrove (2)

# Chemistry collected by Nevada Division of Environmental Protection

(diskette, Excel™ spreadsheet, sampling points at mountain front except for Steamboat)

Galena

Whites

Thomas

Steamboat (various sampling points)

### **Stream Assessment Procedures**

During the months of January and February extensive field surveys of the streams were conducted. These surveys made assessments of the "functionality" of these streams. A properly functioning stream, as described by the US Bureau of Land Management (1988), can:

- dissipate stream energy associated with high water flow, thereby reducing erosion and improving water quality;
- filter sediment, capture bedload, and aid floodplain development;
- improve flow-water retention and ground water recharge;
- develop root masses that stabilize streambanks against cutting action;
- develop diverse ponding and channel characteristics to provide the habitat and the water depth, duration, and temperature necessary for fish production, waterfowl breeding and other uses; and
- support greater biodivesity.

Stream Health Ratings are based upon the BLM manual "Riparian Area Management, A User Guide to Assessing Proper Functioning Condition and the Supporting Science for Lotic Areas" (BLM, 1998). Streams are rated as "Properly Functioning", "Functioning at Risk", and "Non-Functional" based upon loss of habitat, excessive erosion and water quality degradation, development encroachment, and invasive plant species (Tall Whitetop). Impacted stream zones deemed "Critical" for this report reflects where the stream is no longer functioning properly. This is "critical" in the sense that water quality is degraded, riparian habitat is lost and in some cases flood protection is reduced. The "quality of life" for residents and the general public is also reduced. "Sensitive" sections refer to a "Properly Functioning Stream at Risk" whereby the stream could easily be rendered "Critical". A sensitive rating means that while the creek is acting in a natural form, alteration of the creek or development encroachment can degrade the creek to a non-functional state. These areas are located in urbanized settings and are shown in Figure 2.9. "Good" areas obviously are Properly Functioning Streams and are found throughout most of these drainages.

## Peavine Watershed Summary

Peavine Mountain is located northwest of Reno, east of Verdi and west of Stead. Five predominant streams flow from the south slopes to the Truckee River. From west to east, the streams are Bull Ranch Creek, Unnamed stream, Chalk Creek/Rainbow Creek, Peavine Creek, and Evans Creek. Middle reaches are developing into residential and commercial subdivisions. Development is rapid and a new subdivision is under construction west of Northgate Golf Course that will include over two thousand new homes. Outside of developments, streams are typically in good condition. Conditions vary within subdivisions. Some steams are very impacted by encroachment and questionable construction practices, while other areas have been nicely preserved as parks and open space.

Water quality is impacted by sediment from construction activities, naturally occurring salts and lawn care chemicals. Improperly functioning sewer lines may also contribute to water pollution. Algae were observed in most of the streams. Pollution from Peavine Mountain creeks influence Truckee River water quality.

In the upper reaches and along streams set aside for open space, vegetation is healthy and relatively undisturbed by human activities. In other areas, riparian vegetation was removed and streams were channelized by development. Peavine streams and springs are a source of water and habitat for wildlife, such as deer, coyotes, small mammals, birds and reptiles. Streams that are not disturbed by development are typically stable and able to convey flood flows without damage to the environment or property.

### **Bull Ranch Creek**

The stream flows from the west slopes of Peavine Mountain to the Truckee River near East Verdi, it is relatively undisturbed by human activities. Water quality appears good and vegetation along the channel provides suitable habitat for wildlife. Channel geometry is good and not affected by encroachment from development.

### **Unnamed Creek**

The unnamed stream is located west of the Northgate Golf course and converges with the Truckee River near Mogal. The upper reaches usually flow well into the summer, while the lower reaches dry up in early spring. The riparian vegetation along the stream provides very good wildlife habitat. The stream has its origins in springs and is recharged by snowmelt and rain. The undisturbed upper reaches are in excellent condition, while the lower reach has recently been severely impacted by encroachment from new development.

A development is under construction in the lower alluvial reach that proposes more than 2000 new homes. A sewer pipeline, that will service the development, is under construction along the stream in the steep canyon north of Mogal. The sewer line is constructed in the floodplain very near the flow line of the creek. Runoff, from sewer line construction, enters the Truckee River less than one mile away. The alignment relative to

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the stream is very risky and may threaten Truckee River water quality, increase the risk of flooding, and may result in damage to the sewer line.

## Chalk Creek/Rainbow Creek

The stream is located on the south slope of Peavine Mountain and flows toward the developments near McQueen High School. The watershed is roughly between Rob Drive and McCarran Boulevard. The stream converges with the Truckee River about one mile west of McCarran Boulevard. The stream usually flows year round and is fed by springs, rain, snow melt and runoff from development. The riparian vegetation along the stream provides very good wildlife habitat for deer, coyotes, small mammals, reptiles and birds. The upper reaches are undisturbed and enter the developed areas in good condition. In the lower reaches, near Mae Anne Avenue, the stream is within a park setting with a multi use trails and interpretive signs. The natural vegetation and channel geometry is preserved and the stream is in good condition.

## Peavine Creek

Peavine Creek flows from the seven thousand-foot level on Peavine mountain towards Reno just east of McQueen High School. South of McCarran Boulevard, the steam flows parallel to Kings Row. The creek appears to be ephemeral and flows in response to intense storm events and snow melt. Two large detention basins prevent most sediment from reaching the Truckee River. The stream flows through residential and commercial developments created in the 1980s and 1990s. Vegetation is appropriate for the setting and provides habitat for wildlife along most of the reach. Vegetation includes stands of willows, rushes, sedges and trees. Detention basins control the risk of flooding.

### **Evans Creek**

Evans Creek is located north of Rancho San Rafael Park in North Reno. It flows from the southeast slopes of Peavine Mountains in a relatively undisturbed setting north of McCarran Boulevard. South of McCarran Boulevard, it enters the park and a one-acre reservoir, before flowing to Manzaneta Lake at the University of Nevada. The stream leaves Manzaneta lake and enters the Ore Ditch on the University property. The upper reaches are used as open space and trails. Water quality is good in the upper reaches above McCarran Boulevard. In the park, there is a risk of nutrients entering the creek from ranching and sod maintenance. Vegetation and channel geometry are good along most of the reach and the stream provides good wildlife habitat. In the past, the channel has been a source of flooding at the University of Nevada. A proposed flood control project would provide detention in the canyon north of McCarran Boulevard.

## Watershed Protection Program Stream Assessment Checklist

Name o	и кира	rian-wei	land Area: nu	illici Cicck	• •				
Team C	)bserv	ers: Jeff.	Jesch		Date: 01/08/02				
Reach -	- Land	marks:				<u></u>			
Start	]	Diversion	Dam on Hunt	ter Creek, south o	of the Steamboa	at canal			
Stop	1	Hunter C	reek enters the	Truckee River					
		<b>hysical I</b> table <sup>1</sup> )	_	Rosgen Morphol					
A 2		B 2	c	D	E	F	G		
Land I	<b>-</b> 0		agricultural  ance (See attac	□ COMMERCIAL ched table <sup>2</sup> )	□OPEN SPACE	□FLOOD CONTR	OL OTHER		
□ very	Y HIGH	[	<b>Э</b> нісн	MODERATE	LOW	Xx ver	Y LOW		
Yes	No	N/A			Hydrologic				
X				nundated in "rela	tively frequent'	'events (1-3 year	ars)		
X			Active/stable	Active/stable grade control					
X			Sinuosity, w	Sinuosity, width/depth ratio, and gradient are in balance with the					
			landscape setting (i.e. landform, geology, and bioclimatic region)						
X			Riparian zon	e is widening					
X			Upland watershed not contributing to riparian degradation						

Yes	No	N/A	Water Quality (Pollution Sources)
$\overline{\mathbf{x}}$			Land use does not contribute to water quality degradation
X			Erosion does not degrade water quality
X			Stormwater is not a significant source of water pollution
X			Fertilizers, pesticides, and herbicides do not impact water quality
X			Upland watershed not contributing to riparian degradation

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Rosgen, Dave. Applied River Morphology. Page 5-5
 Rosgen, Dave. Applied River Morphology. Page 8-9

Yes	No	N/A	Vegetative
X			Diverse age structure of vegetation
X			Diverse composition of vegetation
X		<b>X</b>	Streambank vegetation is comprised of those plants or plant communities that have root masses capable of withstanding high streamflow events
X			Riparian plants exhibit high vigor
X			Adequate vegetative cover present to protect banks and dissipate energy during high flows
X			Plant communities in the riparian area are an adequate source of coarse and/or large woody debris
X			Woody vegetation is not removed for flood control

Yes	No	N/A	Erosion Deposition
X			Floodplain and channel characteristics (i.e., rocks, coarse and/or large woody debris) adequate to dissipate energy)
X			Point bars are revegetating
X			Lateral stream movement is associated with natural sinuosity
X			System is vertically stable
X			Stream is in balance with the water and sediment being supplied by the watershed (i.e., no excessive erosion or deposition)

The stream channel is in very good condition. Dirt roads, trails and irrigation canal crossings do not impact the channel stability. Vegetation is recovering nicely following a recent burn through the riparian corridor. The burn did not affect the channel stability. The stable characteristics of the channel make it well suited for public use such as trails and wildlife viewing.

Functional Rating:	
X Proper Functioning Condition	
☐ Functional – At Risk	volume to the state of the sta
☐ Nonfunctional	
☐ Unknown	
m 10 m 1 1 4 m 1	
Trend for Functional – At Risk	
☐ Upward	
□ Downward	
☐ Not Apparent	
Can factors contributing to unacceptable conditions be controlled	by management changes?
Yes	
□ No	
☐ Unknown	
If yes, what are the changes?	
•	
☐ Stormwater runoff treatment	
☐ Reduce application of fertilizers, herbicides, and pesticides	
☐ Encourage riparian buffer zones to replace sod adjacent to stre	eams
☐ Public education	
☐ Reduce impact from livestock and animal wastes	
☐ Enforce construction site erosion and sediment control	
☐ Control impacts from vehicles	
☐ Control building-site encroachment	
Control road encroachment	
□ Other	
Stream Restoration is appropriate?	
☐ Yes	
□ No	
☐ Unknown	
If yes, what are the recommendations?	
☐ Modify watershed runoff and sediment loads	
☐ Raise channel bottom to reconnect stream to floodplain	
☐ Establish grade control structurally	
☐ Improve existing riparian corridor vegetation	
Create floodplain (excavate)	
☐ Shape banks to reduce slope failure hazard	
☐ Install durable toe protection	
☐ Implement soil bioengineering	
□ Other –	

# Watershed Protection Program Stream Assessment Checklist

Name of	Riparian-	Wetland Area: Al	)	State of							
Team Ol	bservers: J	leff Jesch, Ben Jes	ch	Da	ate: 01/10/02						
Reach -	Reach - Landmarks:										
Start	Caug	Caughlin Parkway (south of the Caughlin Ranch Subdivision) crosses Alum Creek									
Stop	McCa	arran Boulevard cr	osses Alum Cree	ek .							
(See atta	ched table B 4	cal Description — 1 1 ) C	Rosgen Morphol  D	logical Descript  E	ion F	G					
Land us	se	;									
□ WILD	□ WILD X URBAN □ AGRICULTURAL □ COMMERCIAL X OPEN SPACE X FLOOD CONTROL □ OTHER										
Sensitivity to disturbance (See attached table <sup>2</sup> )											
□ VERY	HIGH	Пнісн	x moderate	Low	□ very i	.OW					

Yes	No	N/A	Hydrologic
			Floodplain inundated in "relatively frequent" events (1-3 years)
х			Active/stable grade control
	х		Sinuosity, width/depth ratio, and gradient are in balance with the landscape setting (i.e. landform, geology, and bioclimatic region)
	х		Riparian zone is widening
	х		Upland watershed not contributing to riparian degradation

Yes	No	N/A	Water Quality (Pollution Sources)
x			Land use does not contribute to water quality degradation
x			Erosion does not degrade water quality
х			Stormwater is not a significant source of water pollution
	х		Fertilizers, pesticides, and herbicides do not impact water quality
	х		Upland watershed not contributing to riparian degradation

Rosgen, Dave. Applied River Morphology. Page 5-5
 Rosgen, Dave. Applied River Morphology. Page 8-9

Yes	No	N/A	Vegetative
	х		Diverse age structure of vegetation
	х		Diverse composition of vegetation
	х		Streambank vegetation is comprised of those plants or plant communities that have root masses capable of withstanding high streamflow events
	х		Riparian plants exhibit high vigor
· · · · ·	х		Adequate vegetative cover present to protect banks and dissipate energy during high flows
	х		Plant communities in the riparian area are an adequate source of coarse and/or large woody debris
	х		Woody vegetation is not removed for flood control

Yes	No	N/A	Erosion Deposition
х			Floodplain and channel characteristics (i.e., rocks, coarse and/or large woody debris) adequate to dissipate energy)
	х		Point bars are revegetating
	х		Lateral stream movement is associated with natural sinuosity
x			System is vertically stable
X			Stream is in balance with the water and sediment being supplied by the watershed (i.e., no excessive erosion or deposition)

Alum Creek Flows through open space within a low density urban setting. The vegetation is groomed turf sod with little or no woody riparian vegetation adjacent to the stream channel. Some minor bank erosion was observed, while the majority of the reach is relatively stable. Grade controls consist of boulder placements, trail and road crossings. A pedestrian trail is adjacent to the channel. Upstream of the Caughlin Parkway crossing, the channel is relatively undisturbed.

Storm water runoff from the Seasons Subdivision, a smaller subset of Caughlin Ranch, is contributing significant sediment load to the channel. A recent storm event appears to have resulted in approximately 200 to 300 yards of sediment deposited in the creek. City officials and the developer were notified.

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Functional Rating:	
☐ Proper Functioning Condition	Mongan 8
x Functional – At Risk	
☐ Nonfunctional	
☐ Unknown	, .
Trend for Functional – At Risk	
☐ Upward	
x Downward	
□ Not Apparent	
Can factors contributing to unacceptable conditions be controlled by man	agement changes?
x Yes	mBarrage arrange ar
□ No	
☐ Unknown	
Olikiiowii	
If yes, what are the changes?	
☐ Stormwater runoff treatment	·
x Reduce application of fertilizers, herbicides, and pesticides	
x Encourage riparian buffer zones to replace sod adjacent to streams	
x Public education	
☐ Reduce impact from livestock and animal wastes	
x Enforce construction site erosion and sediment control	
☐ Control impacts from vehicles	
☐ Control building-site encroachment	
☐ Control road encroachment	
□ Other –	
Stream Restoration is appropriate?	
x Yes	
□ No	
□ Unknown	•
If yes, what are the recommendations?	
☐ Modify watershed runoff and sediment loads	
☐ Raise channel bottom to reconnect stream to floodplain	•
☐ Establish grade control structurally	
x Improve existing riparian corridor vegetation	
☐ Create floodplain (excavate)	
☐ Shape banks to reduce slope failure hazard	
☐ Install durable toe protection	
☐ Implement soil bioengineering	
□ Other –	

# Watershed Protection Program Standard Checklist

Name of	f Riparian-	Wetland Area: Al	um Creek (2)		·5:				
Team O	bservers: J	leff Jesch, Ben Jes	te: 01/04/02						
Reach -	Landmark	s:	<del></del>						
Start	Box c	Box culvert - McCarren Blvd. crosses Alum Cr.							
Stop	Box o	culvert – Mayberry	Dr. crosses Alu	ım Cr.					
	ached table B 5 se	Cal Description —	<b>D A5</b>	E	F	G SOL □ OTHER			
Impact	Sensitivity	y	X medium		0	LOW			

Yes	No	N/A	Hydrologic
X			Floodplain inundated in "relatively frequent" events (1-3 years)
X			Active/stable grade control
X			Sinuosity, width/depth ratio, and gradient are in balance with the landscape setting (i.e. landform, geology, and bioclimatic region)
	X		Riparian zone is widening
X			Upland watershed not contributing to riparian degradation

Yes	No	N/A	Vegetative
X			Diverse age structure of vegetation
X	1		Diverse composition of vegetation
X			Streambank vegetation is comprised of those plants or plant communities that have root masses capable of withstanding high streamflow events
	X		Riparian plants exhibit high vigor
X			Adequate vegetative cover present to protect banks and dissipate energy during high flows
	X		Plant communities in the riparian area are an adequate source of coarse and/or large woody debris
	X		Woody vegetation is not removed for flood control

Yes	No	N/A	Erosion Deposition
X			Floodplain and channel characteristics (i.e., rocks, coarse and/or large woody debris) adequate to dissipate energy)
X	1 .		Point bars are revegetating
X			Lateral stream movement is associated with natural sinuosity
X			System is vertically stable
X			Stream is in balance with the water and sediment being supplied by the watershed (i.e., no excessive erosion or deposition)

Yes	No	N/A	Water Quality (Pollution Sources)
X			Land use does not contribute to water quality degradation
X			Erosion does not degrade water quality
X			Stormwater is not a significant source of water pollution
X			Fertilizers, pesticides, and herbicides do not impact water quality
X			Upland watershed not contributing to riparian degradation

Alum Creek flows through a park setting with natural, established riparian vegetation along the channel. The park setting has low impact on the stream, and it is in good condition.

Functional Rating:	
X Proper Functioning Condition	
☐ Functional – At Risk	
☐ Nonfunctional	
☐ Unknown	
	•
Trend for Functional – At Risk	
☐ Upward	
☐ Downward	
X Not Apparent	
Can factors contributing to unacceptable conditions be controlled by	management changes?
☐ Yes	
□ No	
☐ Unknown	
If yes, what are the changes?	
☐ Stormwater runoff treatment	
☐ Reduce application of fertilizers, herbicides, and pesticides	
☐ Encourage riparian buffer zones to replace sod adjacent to stream	ns
☐ Public education	
☐ Reduce impact from livestock and animal wastes	
☐ Enforce construction site erosion and sediment control	
☐ Control impacts from vehicles	
☐ Control building-site encroachment	
☐ Control road encroachment	
□ Other -	
_ 0	
Stream Restoration is appropriate?	
☐ Yes	
X No	
□ Unknown	
If yes, what are the recommendations?	
11 you, water the tree tree tree tree tree tree tr	
☐ Modify watershed runoff and sediment loads	
☐ Raise channel bottom to reconnect stream to floodplain	
☐ Establish grade control structurally	
☐ Improve existing riparian corridor vegetation	•
☐ Create floodplain (excavate)	
☐ Shape banks to reduce slop failure hazard	
☐ Install durable toe protection	
☐ Implement soil bioengineering	
☐ Other —	

# Watershed Protection Program Standard Checklist

Name of	Riparian-W	etland Areas	Alum Cree	<b>K</b> .,					
Team Ob	servers: Jo	eff Jesch & E	Ben Jesch 🕱	Da	te: 01 04 02				
Reach – I	andmarks								
Start	Box culv	ert – Mayber	ry Dr. crosse	es Alum Cr.					
Stop	Truckee River at Crissie Caughlin Park								
(See attac	ched table <sup>1</sup>	-)	<b>on –</b> Rosgen	-	al Description	G			
Land use	•	;							
$\square$ wild x urban $\square$ agricultural $\square$ commercial x open space $\square$ flood control $\square$ other									
Sensitiv	it <del>y</del> to dist	<b>urbance</b> (Se	e attached ta	ıble²)					
□ VERY HIG	ж 🗆	HIGH	X MODERATE	□ LOW	□ VERY I	LOW			

Yes	No	N/A	Hydrologic
х			Floodplain inundated in "relatively frequent" events (1-3 years)
X			Active/stable grade control
	X		Sinuosity, width/depth ratio, and gradient are in balance with the landscape setting (i.e. landform, geology, and bioclimatic region)
	х		Riparian zone is widening
		х	Upland watershed not contributing to riparian degradation

Yes	No	N/A	Erosion Deposition
х			Floodplain and channel characteristics (i.e., rocks, coarse and/or large woody debris) adequate to dissipate energy)
	х		Point bars are revegetating
	х		Lateral stream movement is associated with natural sinuosity
	х		System is vertically stable
Х			Stream is in balance with the water and sediment being supplied by the watershed (i.e., no excessive erosion or deposition)

Rosgen, Dave. Applied River Morphology. Page 5-5
 Rosgen, Dave. Applied River Morphology. Page 8-9

Yes	No	N/A	Vegetative
	х		Diverse age structure of vegetation
	х	e, c 5	Diverse composition of vegetation
	х		Streambank vegetation is comprised of those plants or plant communities that have root masses capable of withstanding high streamflow events
	x		Riparian plants exhibit high vigor
	x		Adequate vegetative cover present to protect banks and dissipate energy during high flows
	х		Plant communities in the riparian area are an adequate source of coarse and/or large woody debris
	X		Woody vegetation is not removed for flood control

Yes	No	N/A	Water Quality (Pollution Sources)
х			Land use does not contribute to water quality degradation
х			Erosion does not degrade water quality
x			Stormwater is not a significant source of water pollution
	х		Fertilizers, pesticides, and herbicides do not impact water quality

Alum Creek Flows through open space within a medium density urban setting. The vegetation is groomed turf sod with little or no woody riparian vegetation adjacent to the stream channel. Some minor bank erosion was observed near Mayberry Drive. Grade controls consist of boulder placements and trail crossings. A pedestrian trail parallels the channel. The lack of riparian vegetation increases the risk of soil erosion during high stream flows. Existing vegetation does not provide significant wildlife habitat. A riparian buffer zone along the creek would limit fertilizers, and other chemicals associated with lawn care, from reaching the stream. Near the confluence of Alum Creek and the Truckee River, very good riparian vegetation was observed. The vegetation included rushes, sedges, willows, and other woody vegetation, and would be appropriate along the rest of the reach.

Functional Rating:  Proper Functioning Condition  X Functional – At Risk  Nonfunctional  Unknown	en e		en e	Description
Trend for Functional – At Risk  ☐ Upward ☐ Downward X Not Apparent				
Can factors contributing to unacceptable conditions  X Yes  □ No □ Unknown	be controlled b	y manage	ment chan	ges?
If yes, what are the changes?				
☐ Stormwater runoff treatment  X Reduce application of fertilizers, herbicides, and  X Encourage riparian buffer zones to replace sod as  X Public education  ☐ Reduce impact from livestock and animal wastes  ☐ Enforce construction site erosion and sediment of  ☐ Control impacts from vehicles  ☐ Control building-site encroachment  ☐ Control road encroachment  ☐ Other —	djacent to streams	ms		
Stream Restoration is appropriate?  ☐ Yes  X No  ☐ Unknown				
If yes, what are the recommendations?				
<ul> <li>☐ Modify watershed runoff and sediment loads</li> <li>☐ Raise channel bottom to reconnect stream to floe</li> <li>☐ Establish grade control structurally</li> <li>☐ Improve existing riparian corridor vegetation</li> <li>☐ Create floodplain (excavate)</li> <li>☐ Shape banks to reduce slop failure hazard</li> <li>☐ Install durable toe protection</li> <li>☐ Implement soil bioengineering</li> <li>☐ Other —</li> </ul>	odplain			

# Watershed Protection Program Stream Assessment Checklist

Name of Riparian-Wetland Area: Dog Creek												
Team Obser	rvers: Mike V	Vidmer, Jeff Jes	sch (	Da	te: 02/11/02							
Reach - La	Reach – Landmarks:											
Start	Dog Valley Canyon											
Stop	Dog Creek	crosses Petroleu	m pipeline,	north of meado	w and ranch struc	tures						
(See attached A  Land use   x wild	B 2&3  URBAN AGI Y RESIDENTIAL	ce (See attached	D	E	F							

Yes	No	N/A	Hydrologic
X			Floodplain inundated in "relatively frequent" events (1-3 years)
X			Active/stable grade control
х			Sinuosity, width/depth ratio, and gradient are in balance with the landscape setting (i.e. landform, geology, and bioclimatic region)
x			Riparian zone is widening
х	1		Upland watershed not contributing to riparian degradation

Yes	No	N/A	Water Quality (Pollution Sources)
х			Land use does not contribute to water quality degradation
Х			Erosion does not degrade water quality
х			Stormwater is not a significant source of water pollution
x	<u> </u>		Fertilizers, pesticides, and herbicides do not impact water quality

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Rosgen, Dave. Applied River Morphology. Page 5-5
 Rosgen, Dave. Applied River Morphology. Page 8-9

Yes	No	N/A	Vegetative
х			Diverse age structure of vegetation
х			Diverse composition of vegetation
Х			Streambank vegetation is comprised of those plants or plant communities that have root masses capable of withstanding high streamflow events
Х			Riparian plants exhibit high vigor
х			Adequate vegetative cover present to protect banks and dissipate energy during high flows
X			Plant communities in the riparian area are an adequate source of coarse and/or large woody debris
х			Woody vegetation is not removed for flood control

Yes	No	N/A	Erosion Deposition
х			Floodplain and channel characteristics (i.e., rocks, coarse and/or large woody debris) adequate to dissipate energy)
X			Point bars are revegetating
Х			Lateral stream movement is associated with natural sinuosity
Х			System is vertically stable
х			Stream is in balance with the water and sediment being supplied by the watershed (i.e., no excessive erosion or deposition)

Dog Creek flows through a terraced floodplain in this canyon setting. Evidence of an intense flood event is seen in a damaged diversion structure, large boulder and cobble deposits, and channel scour. Vegetation within the channel appears to be less than fifty years old, indicating the age of the intense flood event. Vegetation is healthy and the riparian zone provides very good habitat for wildlife, such as deer, beaver, coyotes, and birds. The channel is stable. Woody debris, rocks and boulders prevent erosion. Water quality appears good. Flows are clear and free of human influences.

Homes, perched on the south ridge above the creek, are threatened by soil erosion and slope instability. High flows will continue to carve away at the toe of the slopes, increasing the risk of damage to structures. In some cases, it may be necessary to armor the toe of the slopes to prevent erosion and slope movement.

Functional Rating:	
☐ Proper Functioning Condition	
x Functional – At Risk	
☐ Nonfunctional	
☐ Unknown	
Trend for Functional - At Risk	
x Upward	
☐ Downward	
☐ Not Apparent	
20 20 20 20 20 20 20 20 20 20 20 20 20 2	
Can factors contributing to unacceptable conditions be controlled by management changes?	
□ Yes	
x No	
□ Unknown	
If yes, what are the changes?	
If you, what are the changes.	
☐ Stormwater runoff treatment	
☐ Reduce application of fertilizers, herbicides, and pesticides	
☐ Encourage riparian buffer zones to replace sod adjacent to streams	
☐ Public education	
☐ Reduce impact from livestock and animal wastes	
☐ Enforce construction site erosion and sediment control	
☐ Control impacts from vehicles	
Control building-site encroachment	
☐ Control road encroachment	
□ Other -	
Stream Restoration is appropriate?	
x Yes	
□ No	
□ Unknown	
If yes, what are the recommendations?	
El Marifornia de la constitución	
☐ Modify watershed runoff and sediment loads	
Raise channel bottom to reconnect stream to floodplain	
☐ Establish grade control structurally	
☐ Improve existing riparian corridor vegetation	
☐ Create floodplain (excavate)	
Shape banks to reduce slope failure hazard	
x Install durable toe protection	
☐ Implement soil bioengineering x Other – slope stabilization	
A Office — Stope Statifization	

# Watershed Protection Program Stream Assessment Checklist

Name of Rip	Name of Riparian-Wetland Area: Dog Creek											
Team Obser	vers: Mike	e Widmer, Jefi	Jesch	Da	te: 02/11/02							
Reach - Lan	Reach – Landmarks:											
Start	Dog Cree	k crosses a pe	troleum pipeline	north of ranch	structures							
Stop	Dog Cree	Dog Creek enters the Truckee River										
Watershed (See attache A		Description —	Rosgen Morphol	ogical Descript  E	tion F	G2						
x wild $\square$ urban $\square$ agricultural $\square$ commercial $\square$ open space $\square$ flood control x other, abbandoned ranch												
Sensitivity	Sensitivity to disturbance (See attached table <sup>2</sup> )											
□ very high	. I	J нісн	☐ moderate	□ row	x VERY	LOW						

Yes	No	N/A	Hydrologic
	х	,	Floodplain inundated in "relatively frequent" events (1-3 years)
x			Active/stable grade control
	х		Sinuosity, width/depth ratio, and gradient are in balance with the landscape setting (i.e. landform, geology, and bioclimatic region)
		х	Riparian zone is widening
x	<u> </u>		Upland watershed not contributing to riparian degradation

Yes	No	N/A	Water Quality (Pollution Sources)
x			Land use does not contribute to water quality degradation
	х		Erosion does not degrade water quality
X			Stormwater is not a significant source of water pollution
X			Fertilizers, pesticides, and herbicides do not impact water quality

Rosgen, Dave. Applied River Morphology. Page 5-5
 Rosgen, Dave. Applied River Morphology. Page 8-9

Yes	No	N/A	Vegetative
x			Diverse age structure of vegetation
x			Diverse composition of vegetation
X			Streambank vegetation is comprised of those plants or plant communities that have root masses capable of withstanding high streamflow events
x			Riparian plants exhibit high vigor
X			Adequate vegetative cover present to protect banks and dissipate energy during high flows
х			Plant communities in the riparian area are an adequate source of coarse and/or large woody debris
x	1		Woody vegetation is not removed for flood control

Yes	No	N/A	Erosion Deposition			
х			Floodplain and channel characteristics (i.e., rocks, coarse and/or large woody debris) adequate to dissipate energy)			
x			Point bars are revegetating			
	х		Lateral stream movement is associated with natural sinuosity			
	х		System is vertically stable			
	х		Stream is in balance with the water and sediment being supplied by the watershed (i.e., no excessive erosion or deposition)			

The channel flows through a meadow setting that is the site of an abandoned ranch. The natural stream is channelized, and was moved to the side of the meadow to accommodate ranching operations. A berm confines the east bank of the channel and the new alignment places the creek at the toe of a slope near a road. The confined channel is carving away at the fill material that supports the road, causing slope instability and erosion. This jeopardizes the integrity of the road and is a source of sediment transport to the Truckee River. The 1997 flood caused some channel incision and bank erosion. The evidence of this is seen in hanging roots and undercut banks. Slope instability and erosion are occurring on slopes below existing homes. A property owner built a substantial retaining structure at the toe of the slope to stabilize damage following the 1997 flood. It is important that future homes and roads do not encroach on the creek.

Vegetation is in good condition and recovering from high flows associated with the 1997 flood. The riparian vegetation is good habitat for deer, birds and small mammals. Beaver sign was observed in the form of damaged trees along the creek. Water flows clear, however, healthy algae was observed in the creek that may be an indicator of under-treated septic reaching the stream.

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<b>Functional</b>	Rating:				
	☐ Proper Functioning Condition x Functional – At Risk ☐ Nonfunctional		ja J	Part Place Survey	
	□ Unknown				
Trend for F	Functional – At Risk ☐ Upward x Downward ☐ Not Apparent				
Can factors	s contributing to unacceptable conditi x Yes  \( \sum \) No \( \sum \) Unknown	ons be contr	olled by	management	changes?
If yes, wha	at are the changes?				
Reduce  Encour  Reduce  Reduce  Control  Control  Control  Control  Control	e impact from livestock and animal we construction site erosion and sedimed impacts from vehicles building-site encroachment road encroachment encourage proper maintenance and constructions.	od adjacent t astes ent control	to stream		
Stream Re	estoration is appropriate?				
	x Yes □ No				
	☐ Unknown				
If yes, wh	at are the recommendations?				
☐ Raise of ☐ Establi ☐ Improv ☐ Create ☐ Shape x Install x Implem	y watershed runoff and sediment load channel bottom to reconnect stream to ish grade control structurally we existing riparian corridor vegetation floodplain (excavate) banks to reduce slope failure hazard durable toe protection ment soil bioengineering	o floodplain			
v Other-	<ul> <li>Stabilize banks to protect roads and</li> </ul>	structures.			

## Watershed Protection Program Stream Assessment Checklist

Name of Rip	Name of Riparian-Wetland Area: Sunrise Creek										
Team Obser	vers: Mike W	/idmer, Jeff Je	sch	Da	te: 02/11/02						
Reach - Lan	dmarks:										
Start	Headwaters	of Sunrise Cre	ek								
Stop	Sunrise Cree	Sunrise Creek enters the Truckee River									
(See attache	Watershed Physical Description – Rosgen Morphological Description (See attached table 1)  A B 3a C D E F G										
Land use		`,									
	x wild $\ \square$ urban $\ \square$ agricultural $\ \square$ commercial $\ \square$ open space $\ \square$ flood control x other low density residential										
Sensitivity to disturbance (See attached table <sup>2</sup> )											
□ very high	н Пн	IGH	□ moderate	x LOW	□ very lo	OW					

Yes	No	N/A	Hydrologic	
X			Floodplain inundated in "relatively frequent" events (1-3 years)	
X			Active/stable grade control	
х			Sinuosity, width/depth ratio, and gradient are in balance with the landscape setting (i.e. landform, geology, and bioclimatic region)	
X			Riparian zone is widening	
X			Upland watershed not contributing to riparian degradation	

Yes	No	N/A	Water Quality (Pollution Sources)
x			Land use does not contribute to water quality degradation
x			Erosion does not degrade water quality
X			Stormwater is not a significant source of water pollution
X			Fertilizers, pesticides, and herbicides do not impact water quality

Rosgen, Dave. Applied River Morphology. Page 5-5
 Rosgen, Dave. Applied River Morphology. Page 8-9

Yes	No	N/A	Vegetative
X			Diverse age structure of vegetation
х			Diverse composition of vegetation
х		1981 G 1	Streambank vegetation is comprised of those plants or plant communities that have root masses capable of withstanding high streamflow events
х			Riparian plants exhibit high vigor
х		1	Adequate vegetative cover present to protect banks and dissipate energy during high flows
x			Plant communities in the riparian area are an adequate source of coarse and/or large woody debris
x			Woody vegetation is not removed for flood control

Yes No I		N/A	Erosion Deposition		
х			Floodplain and channel characteristics (i.e., rocks, coarse and/or large woody debris) adequate to dissipate energy)		
x			Point bars are revegetating		
X			Lateral stream movement is associated with natural sinuosity		
x			System is vertically stable		
х			Stream is in balance with the water and sediment being supplied by the watershed (i.e., no excessive erosion or deposition)		

The headwaters of Sunrise Creek are developed by low-density residential homes, at about one house per five acre. The watershed is slightly modified to channel storm flows away from home sites and roadways. Homes are on individual septic systems. A forest fire in 1994 removed most of the timber and brush from hills and riparian areas. Emerging Trees, shrubs and grasses provide protection from soil erosion. Vegetation along the channel is vigorous and healthy, and provides good habitat for deer, coyotes, small mammals and birds. Water quality is good. No algae was observed in the stream and the water flows clear. The channel morphology is good and does not appear to be impacted by human activities. Flooding does not appear to damage property or the environment, as homes and roads do not encroach on the stream. Development should not be allowed within the channel floodplain and road crossings should be designed to span riparian vegetation.

Functional Rating:  x Proper Functioning Condition    Functional – At Risk   Nonfunctional   Unknown
Trend for Functional – At Risk  Upward  Downward  Not Apparent
Can factors contributing to unacceptable conditions be controlled by management changes?  ☐ Yes ☐ No ☐ Unknown
If yes, what are the changes?
☐ Stormwater runoff treatment ☐ Reduce application of fertilizers, herbicides, and pesticides ☐ Encourage riparian buffer zones to replace sod adjacent to streams ☐ Public education ☐ Reduce impact from livestock and animal wastes ☐ Enforce construction site erosion and sediment control ☐ Control impacts from vehicles ☐ Control building-site encroachment ☐ Control road encroachment ☐ Other —
Stream Restoration is appropriate?  ☐ Yes ☐ No ☐ Unknown
If yes, what are the recommendations?
<ul> <li>☐ Modify watershed runoff and sediment loads</li> <li>☐ Raise channel bottom to reconnect stream to floodplain</li> <li>☐ Establish grade control structurally</li> <li>☐ Improve existing riparian corridor vegetation</li> <li>☐ Create floodplain (excavate)</li> <li>☐ Shape banks to reduce slope failure hazard</li> <li>☐ Install durable toe protection</li> <li>☐ Implement soil bioengineering</li> <li>☐ Other —</li> </ul>

## Watershed Protection Program Stream Assessment Checklist

Name of Riparian-Wetland Area: Unnamed Channels flowing through Lama Ranch in Verdi

Team O	bservers: N	Mike Widmer, Jef	Da	te: 02/11/02					
Reach -	Reach – Landmarks:								
Start	West	West end of the lama ranch							
Stop	Truck	ee River		•					
	1,50			44	N.,				
	Watershed Physical Description – Rosgen Morphological Description (See attached table <sup>1</sup> )								
A	В	_ c	D	E	F	G 5			
Land u	se								
□ wild	URBAN	x AGRICULTURAL		□OPEN SPACE	□FLOOD CONTR	OL OTHER			
Sensitivity to disturbance (See attached table <sup>2</sup> )									
x very high □ high		□нісн	□ moderate	□ LOW	□ LOW □ VERY LO				

Yes	No	N/A	Hydrologic
		х	Floodplain inundated in "relatively frequent" events (1-3 years)
	х		Active/stable grade control
	х		Sinuosity, width/depth ratio, and gradient are in balance with the landscape setting (i.e. landform, geology, and bioclimatic region)
	х		Riparian zone is widening
	х		Upland watershed not contributing to riparian degradation

Yes	No	N/A	Water Quality (Pollution Sources)			
	X		Land use does not contribute to water quality degradation			
	X		Erosion does not degrade water quality			
	X		Stormwater is not a significant source of water pollution			
		X	Fertilizers, pesticides, and herbicides do not impact water quality			

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Rosgen, Dave. Applied River Morphology. Page 5-5
 Rosgen, Dave. Applied River Morphology. Page 8-9

Yes	No	N/A	Vegetative
	X		Diverse age structure of vegetation
	X		Diverse composition of vegetation
	Х		Streambank vegetation is comprised of those plants or plant communities that have root masses capable of withstanding high streamflow events
	X		Riparian plants exhibit high vigor
	X		Adequate vegetative cover present to protect banks and dissipate energy during high flows
	X		Plant communities in the riparian area are an adequate source of coarse and/or large woody debris
		X	Woody vegetation is not removed for flood control

Yes	No	N/A	Erosion Deposition
	X		Floodplain and channel characteristics (i.e., rocks, coarse and/or large woody debris) adequate to dissipate energy)
	X		Point bars are revegetating
	X		Lateral stream movement is associated with natural sinuosity
	X		System is vertically stable
	Х		Stream is in balance with the water and sediment being supplied by the watershed (i.e., no excessive erosion or deposition)

A lama ranching operation discharges irrigation water, storm water and ephemeral stream flows to natural drainages that enter the Truckee River. Over-grazing has removed pasture and meadow grasses, leaving much of the ranch area in bare soil that is subject to erosion. Sheet flow and standing water is conveyed off-site in unprotected ditches that erode and are a source of sediment. Untreated animal waste is a source of pollution. Water leaving the site is very milky in color and sediment and silt is deposited in the channel downstream of the ranch. Head cut erosion was observed in many of the channels that flow from the ranch. High flows have the potential to cause significant erosion and may cause environmental and property damage. The lack of vegetation limits the suitability of the channels for wildlife habitat.

Clean stream flows entering the site should be conveyed through the ranch in stable channels that are protected from livestock trampling and animal wastes. Runoff from the sites should be detained in treatment basins before discharge to the Truckee River. Livestock should be kept out of ditches and live streams. Bare soils should be revegetated and livestock should be limited to the carrying capacity of the range.

Functional Rating:
☐ Proper Functioning Condition
☐ Functional – At Risk
x Nonfunctional
□ Unknown
Trend for Functional – At Risk
☐ Upward
x Downward
☐ Not Apparent
Can factors contributing to unacceptable conditions be controlled by management changes?
x Yes
□ No :
☐ Unknown
70 1 1 1 0
If yes, what are the changes?
x Stormwater runoff treatment
☐ Reduce application of fertilizers, herbicides, and pesticides
x Encourage riparian buffer zones to replace sod adjacent to streams
x Public education
x Reduce impact from livestock and animal wastes
Enforce construction site erosion and sediment control
Control impacts from vehicles
☐ Control building-site encroachment
x Control road encroachment
x Other -implement ranch management practices that promote vegetative ground cover
Stream Restoration is appropriate?
x Yes
□ No
☐ Unknown
If yes, what are the recommendations?
x Modify watershed runoff and sediment loads
☐ Raise channel bottom to reconnect stream to floodplain
x Establish grade control structurally
x Improve existing riparian corridor vegetation
☐ Create floodplain (excavate)
☐ Shape banks to reduce slope failure hazard
☐ Install durable toe protection
☐ Implement soil bioengineering
x Other – construct sediment and nutrient treatment basins

# Watershed Protection Program Stream Assessment Checklist

Name of Riparian-Wetland Area: Chalk Creek/Rainbow Creek										
Team Obser	Team Observers: Mike Widmer, Jeff Jesch Date: 04/11/02									
Reach - Lar	Reach - Landmarks:									
Start	Mae Anne Boul	Mae Anne Boulevard crosses Chalk Creek								
Stop	Interstate 80 cro	sses Chalk Ci	reek							
Watershed (See attache	•	ption – Rosge C 4&5	T <sub>e</sub>	gical Description  E	п F G					
Land use										
$\square$ WILD $\square$ URBAN $\square$ AGRICULTURAL $\square$ COMMERCIAL X OPEN SPACE $\square$ FLOOD CONTROL X OTHER, HAUL ROADS TO DEVELOPMENT, NUMEROUS CANNALS AND FLUMES.										
Sensitivity	Sensitivity to disturbance (See attached table <sup>2</sup> )									
x VERY HIGH	т □нісн	. D.	MODERATE	□ row	□ VERY LOW					

Yes	No	N/A	Hydrologic	
X			Floodplain inundated in "relatively frequent" events (1-3 years)	
		х	Active/stable grade control	
X			Sinuosity, width/depth ratio, and gradient are in balance with the landscape setting (i.e. landform, geology, and bioclimatic region)	
		х	Riparian zone is widening	
x			Upland watershed not contributing to riparian degradation	

Yes	No	N/A	Water Quality (Pollution Sources)
	х		Land use does not contribute to water quality degradation
X			Erosion does not degrade water quality
X			Stormwater is not a significant source of water pollution
	х		Fertilizers, pesticides, and herbicides do not impact water quality

Rosgen, Dave. Applied River Morphology. Page 5-5
 Rosgen, Dave. Applied River Morphology. Page 8-9

Yes	No	N/A	Vegetative	
X			Diverse age structure of vegetation	
Х			Diverse composition of vegetation	
х			reambank vegetation is comprised of those plants or plant communities at have root masses capable of withstanding high streamflow events	
x			Riparian plants exhibit high vigor	
х			Adequate vegetative cover present to protect banks and dissipate energy during high flows	
х		·	Plant communities in the riparian area are an adequate source of coarse and/or large woody debris	
X			Woody vegetation is not removed for flood control	

Yes	No	N/A	Erosion Deposition	
х			Floodplain and channel characteristics (i.e., rocks, coarse and/or large woody debris) adequate to dissipate energy)	
<u>x</u>			Point bars are revegetating	
x			Lateral stream movement is associated with natural sinuosity	
X			System is vertically stable	
Х			Stream is in balance with the water and sediment being supplied by the watershed (i.e., no excessive erosion or deposition)	

The stream is located on the south slope of Peavine Mountain and flows toward the developments near McQueen High School. The watershed is roughly between Rob Drive and McCarran Boulevard, with headwaters at about the seven thousand-foot level. The stream converges with the Truckee River at an elevation of about five thousand feet. The stream usually flows year round and is fed by springs, rain, snow melt and runoff from development. The riparian vegetation along the stream provides very good wildlife habitat for deer, coyotes, small mammals, reptiles and birds. In the lower reaches near Mae Anne Avenue the stream is within a park setting and is paralleled by multi-use trails. The natural vegetation and channel geometry is preserved and the stream is in good condition.

Cannel function is good along the reach. No excessive down cutting or unusual erosion was observed. Natural sinuosity erodes slopes in some areas, however, this is a natural process that does not appear to overload the system with sediment. Tests indicate that dissolved solids and nutrients affect water quality. Some of the dissolved solids are the result of salts leaching out of the soil and some may be from improperly functioning sewer lines and over applications of lawn care chemicals. Sediment does not appear to influence the system. Vegetation is good and includes Salix and Black willows, cottonwood trees, and typical native brush. Some rushes and sedges are growing along the channel. Tall whitetop weeds threaten native vegetation. A management plan should be developed that controls weeds and encourages the existing riparian vegetation. Overall, the stream is in good condition in the reach is an excellent site for the open space and multi use trails. Flood flows do not threaten homes or damage the environment.

Functional Rating:  Proper Functioning Condition  x Functional – At Risk  Nonfunctional  Unknown	
Trend for Functional – At Risk  Upward  Downward  Not Apparent	
Can factors contributing to unacceptable conditions be controlled by management changes?  X Yes  No Unknown	
If yes, what are the changes?	
<ul> <li>□ Stormwater runoff treatment</li> <li>□ Reduce application of fertilizers, herbicides, and pesticides</li> <li>□ Encourage riparian buffer zones to replace sod adjacent to streams</li> <li>□ Public education</li> <li>□ Reduce impact from livestock and animal wastes</li> <li>□ Enforce construction site erosion and sediment control</li> <li>□ Control impacts from vehicles</li> <li>□ Control building-site encroachment</li> <li>□ Control road encroachment</li> <li>x Other – Control tall whitetop</li> </ul>	
Stream Restoration is appropriate?  ☐ Yes ☐ No ☐ Unknown	
If yes, what are the recommendations?	
<ul> <li>☐ Modify watershed runoff and sediment loads</li> <li>☐ Raise channel bottom to reconnect stream to floodplain</li> <li>☐ Establish grade control structurally</li> <li>☐ Improve existing riparian corridor vegetation</li> <li>☐ Create floodplain (excavate)</li> <li>☐ Shape banks to reduce slope failure hazard</li> <li>☐ Install durable toe protection</li> <li>☐ Implement soil bioengineering</li> <li>☐ Other —</li> </ul>	

# Watershed Protection Program Stream Assessment Checklist

Name of	of Ripa	rian-Wet	land Area: C	halk Creek/Rainb	ow Creek	<u> </u>		
Team (	Observe	ers: Mik	e Widmer, Jo	eff Jesch	Date: 04/11/02			
Reach	– Land	marks:						
Start	] ]	-80 Cros	ses Chalk Cre	ek				
Stop		Chalk Cr	Creek enters the Truckee River					
	shed P		Description —	Rosgen Morpholog	gical Descripti	<b>on</b> : A VA	w <sub>y</sub>	
A	-	В	C 5	D	E	F	G	
Land	use							
				COMMERCIAL COUS CANNALS AND F		DFLOOD CONTE	ROL X OTHER,	
Sensit	ivity to	disturb	ance (See atta	iched table <sup>2</sup> )				
X very high							LOW	
Yes	No	N/A		]	Hydrologic			
	X		Floodplain i	nundated in "relativ	vely frequent"	events (1-3 ye	ars)	

Yes	No	N/A	Hydrologic	
	X		Floodplain inundated in "relatively frequent" events (1-3 years)	
X			ctive/stable grade control	
X			Sinuosity, width/depth ratio, and gradient are in balance with the landscape setting (i.e. landform, geology, and bioclimatic region)	
	X		Riparian zone is widening	
	X		Upland watershed not contributing to riparian degradation	

Yes	No	N/A Water Quality (Pollution Sources)	Water Quality (Pollution Sources)
	X		Land use does not contribute to water quality degradation
X			Erosion does not degrade water quality
	X		Stormwater is not a significant source of water pollution
	X		Fertilizers, pesticides, and herbicides do not impact water quality

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Rosgen, Dave. Applied River Morphology. Page 5-5
 Rosgen, Dave. Applied River Morphology. Page 8-9

Yes	No	N/A	Vegetative	
	X		Diverse age structure of vegetation	
X			Diverse composition of vegetation	
X		F-1	Streambank vegetation is comprised of those plants or plant communities that have root masses capable of withstanding high streamflow events	
X			Riparian plants exhibit high vigor	
X			Adequate vegetative cover present to protect banks and dissipate energy during high flows	
X			Plant communities in the riparian area are an adequate source of coarse and/or large woody debris	
X		1	Woody vegetation is not removed for flood control	

Yes	No	N/A	Erosion Deposition
X			Floodplain and channel characteristics (i.e., rocks, coarse and/or large woody debris) adequate to dissipate energy)
X			Point bars are revegetating
	X		Lateral stream movement is associated with natural sinuosity
X			System is vertically stable
X			Stream is in balance with the water and sediment being supplied by the watershed (i.e., no excessive erosion or deposition)

The stream is located on the south slope of Peavine Mountain and flows roughly toward the developments near McQueen High School. The watershed is roughly between Rob Drive and McCarran Boulevard, with headwaters at about the seven thousand-foot level. The stream converges with the Truckee River at an elevation of about five thousand feet, about one mile west of McCarran Boulevard. The stream usually flows year round and is fed by springs, rain, snow melt and runoff from development. The riparian vegetation along the stream provides very good wildlife habitat for deer, coyotes, small mammals, reptiles and birds. In the lower reaches near Mae Anne Avenue the stream is within a park setting and is paralleled by multi use trails. The natural vegetation and channel geometry is preserved and the stream is in good condition. South of Interstate 80, the stream is slightly impacted by encroachment from roads and canals.

South of the Freeway, flows in the creek appear to be limited by culverts and detention basins. It appears that out of bank flows have not occurred for some time. This has limited the natural lateral movement of the stream. It appears that riparian vegetation in the floodplain is being replaced by upland species such as sage, bitterbrush, and rabbit brush. Tall whitetop, Scotch thistle and other weeds are beginning to out-compete colonies of excellent native grasses, rushes and sedges along the creek. A management plan should be developed that controls weeds, and encourages the existing riparian vegetation. Overall, the stream is in good condition in the reach and would be a good site for open space and multi use trails.

Functional	Rating:	•	
, s	☐ Proper Functioning Condition		
	x Functional – At Risk		
	☐ Nonfunctional		
	☐ Unknown		
Tuesd for D	Section 1 AA Diele		
rena for F	Functional – At Risk		
	Upward		
	Downward		
	x Not Apparent		
Can factors	s contributing to unacceptable conditions be co	ontrolled by manageme	ent changes?
	X Yes	· · · · · ·	
	□ No :		
	□ Unknown		
If yes, wha	t are the changes?		
□ Stormu	vater runoff treatment		
	application of fertilizers, herbicides, and pestic	nides	
x Public e	age riparian buffer zones to replace sod adjace	an to sucams	
	impact from livestock and animal wastes	_1	
	e construction site erosion and sediment contro	)1	
	impacts from vehicles		
	building-site encroachment		
	road encroachment		
☐ Other –	•		
Stream Res	storation is appropriate?		
	Yes		
	x No		
	□ Unknown		
If yes, wha	at are the recommendations?		·
☐ Modify	watershed runoff and sediment loads		
	channel bottom to reconnect stream to floodpla	ıin	
	sh grade control structurally		
	e existing riparian corridor vegetation		
	floodplain (excavate)		
	banks to reduce slope failure hazard		
	durable toe protection		
_	nent soil bioengineering		
☐ Other -	•		

## Watershed Protection Program Stream Assessment Checklist, (revised 08/02/02)

Name of Rip	Name of Riparian-Wetland Area: Unnamed Channel										
Team Obser	Team Observers: Mike Widmer and Jeff Jesch Date: 04/11/02										
Reach - Lar	Reach – Landmarks:										
Start	Stream	n flows west of N	orthgate Subdivi	ision							
Stop	Strean	n enters Mogul Si	ubdivision								
(See attache	d table		₹ <sub>6</sub> :	logical Descript  E	ion F	G					
Land use											
x WILD	URBAN	□ AGRICULTURAL		OPEN SPACE	□FLOOD CONTROL	. OTHER					
Sensitivity to disturbance (See attached table <sup>2</sup> )											
□ very higi	н	□нісн	□ moderate	Low	x very lo	W					

Yes	No	N/A	Hydrologic
Х			Floodplain inundated in "relatively frequent" events (1-3 years)
Х			Active/stable grade control
х			Sinuosity, width/depth ratio, and gradient are in balance with the landscape setting (i.e. landform, geology, and bioclimatic region)
	х		Riparian zone is widening
	х		Upland watershed not contributing to riparian degradation

Yes	No	N/A	Water Quality (Pollution Sources)
	х		Land use does not contribute to water quality degradation
	х		Erosion does not degrade water quality
	х		Stormwater is not a significant source of water pollution
	х		Fertilizers, pesticides, and herbicides do not impact water quality

Rosgen, Dave. Applied River Morphology. Page 5-5
 Rosgen, Dave. Applied River Morphology. Page 8-9

Yes	No	N/A	Vegetative
		varies	Diverse age structure of vegetation
		varies	Diverse composition of vegetation
		varies	Streambank vegetation is comprised of those plants or plant communities that have root masses capable of withstanding high streamflow events
		varies	Riparian plants exhibit high vigor
		varies	Adequate vegetative cover present to protect banks and dissipate energy during high flows
•		varies	Plant communities in the riparian area are an adequate source of coarse and/or large woody debris
	х		Woody vegetation is not removed for flood control

Yes	No	N/A	Erosion Deposition
х			Floodplain and channel characteristics (i.e., rocks, coarse and/or large woody debris) adequate to dissipate energy)
•		varies	Point bars are revegetating
		varies	Lateral stream movement is associated with natural sinuosity
х			System is vertically stable
		varies	Stream is in balance with the water and sediment being supplied by the watershed (i.e., no excessive erosion or deposition)

The unnamed stream is located on the south slope of Peavine Mountain and has about five square miles of watershed. It flows south from the peaks of Peavine Mountain, passes just west of the Northgate Golf Course and converges with the Truckee River near Mogul. The upper reaches usually flow well into the summer, while the lower reaches dry up in early spring. The riparian vegetation along the stream and at the springs provides very good wildlife habitat for deer, coyotes, small mammals, reptiles and birds. The stream has its origins in springs and is recharged by snowmelt and rain. The headwaters are at about the seven thousand-foot level and it converges with the Truckee River at an elevation of about five thousand feet.

A development is under construction in the lower alluvial reach that proposes more than 2000 new homes. A sewer pipeline, that will service the development, is under construction along the stream in the steep canyon north of Mogul. The sewer line is constructed in the floodplain very near the flow line of the creek. Runoff, from sewer line construction, enters the Truckee River less than one mile away.

Two retention basins were built in the stream channel to limit peak flows. The basins are located in canyons in the alluvial fan, between proposed residential and commercial property. The project Grading Plan proposed silt fencing to prevent pollution from sediment, and post construction sediment control includes armoring slopes steeper than 3:1 with rock rip rap.

**Project limitations:** 

1. Sediment enters the creek during construction due to the proximity of the pipeline trench to the stream. Typically, a buffer zone is maintained between a creek and pipeline installation. The buffer zone provides an area to implement Best Management Practices and a natural filter between disturbed areas and the creek. The approved plan allows sewer installation within the stream. This does not allow for proper installation or maintenance of erosion and sediment control devices.

- 2. The sewer line could be exposed and damaged if the excavated sewer line trench captures the stream flow. The straight alignment would erode very quickly during high flows and could expose the pipe.
- 3. The risk of erosion is increased by the removal of riparian vegetation and disturbed soil along the banks of the stream.
- 4. Increased impervious surfaces, associated with development, will increase flows in the creek. This will also increase the risk of channel erosion.

A stream restoration specialist should review the project reclamation plans. Recommendations should be developed that protect the natural function of the stream and protect the sewer line from damage. Many of the BMPs at the site are improperly installed and BMPs identified in the Grading Plans were not in place. The BMP plan should be reviewed and modified by a Certified Professional in Erosion and Sediment Control and the contractor should be trained in installation techniques.

<b>Functional Rating:</b>			
	oper Functioning Conditio	n	
x Fun	nctional – At Risk		
	nfunctional		
□ Un	known		
Trend for Function			
□ Up			
	wnward		
□ No	t Apparent		
Can factors contrib X Ye	es	nditions be controlled by manage	ement changes?
	iknown		
<b>_</b>	IXIIO W II		
If yes, what are the	e changes?		
	ation of fertilizers, herbici		
		ce sod adjacent to streams	
X Public education		al regator	
	from livestock and animate tion site erosion and sed		
☐ Control impact		iment control	
	g-site encroachment		
x Control road en			
☐ Other –	101 000		
Stream Restoration			
X Ye			
	_		
LI OI	nknown		
If yes, what are the	e recommendations?		
☐ Modify waters	shed runoff and sediment l	oads	
	bottom to reconnect stream		
	e control structurally		
	ng riparian corridor vegeta	ation	
☐ Create floodpla	= . =		
	reduce slope failure haza	ard	
x Install durable			
x Implement soil	_		
Other -	<u> </u>		

Name of I	Name of Riparian-Wetland Area: North Truckee Drain									
Team Obs	Team Observers: Mike Widmer, Jeff Jesch									
Reach - L	Reach - Landmarks:									
Start	Wetlands	Wetlands near Wingfield Springs in Spanish Springs								
Stop	Ranch pro	perty south of	Spanish Spring	s Valley		٠.				
	d Physical I hed table <sup>1</sup> ) B	Description – I	Rosgen Morphol	logical Descript  E	ion F	<b>G</b> 6c				
Land use										
□ WILD	∃urban x a	GRICULTURAL		□OPEN SPACE	□FLOOD CONTROL	OTHER				
Sensitivity to disturbance (See attached table <sup>2</sup> )										
x VERY HI	GH [	] нісн	☐ MODERATE	Low	□ VERY LO	W				

Yes	No	N/A	Hydrologic
***	х		Floodplain inundated in "relatively frequent" events (1-3 years)
		х	Active/stable grade control
	х		Sinuosity, width/depth ratio, and gradient are in balance with the landscape setting (i.e. landform, geology, and bioclimatic region)
	х		Riparian zone is widening
	х		Upland watershed not contributing to riparian degradation

Yes	No	N/A	Water Quality (Pollution Sources)
	х		Land use does not contribute to water quality degradation
	х		Erosion does not degrade water quality
	х		Stormwater is not a significant source of water pollution
X			Fertilizers, pesticides, and herbicides do not impact water quality

Rosgen, Dave. Applied River Morphology. Page 5-5
 Rosgen, Dave. Applied River Morphology. Page 8-9

Yes	No	N/A	Vegetative
		х	Diverse age structure of vegetation
		х	Diverse composition of vegetation
х			Streambank vegetation is comprised of those plants or plant communities that have root masses capable of withstanding high streamflow events
X			Riparian plants exhibit high vigor
х			Adequate vegetative cover present to protect banks and dissipate energy during high flows
		х	Plant communities in the riparian area are an adequate source of coarse and/or large woody debris
х			Woody vegetation is not removed for flood control

Yes	No	N/A	Erosion Deposition
		х	Floodplain and channel characteristics (i.e., rocks, coarse and/or large woody debris) adequate to dissipate energy)
х			Point bars are revegetating
	х		Lateral stream movement is associated with natural sinuosity
x			System is vertically stable
	х		Stream is in balance with the water and sediment being supplied by the watershed (i.e., no excessive erosion or deposition)

The North Truckee Drain flows through Spanish Springs valley in the reach. The playa soils are silty and clayey with a white crust of salts. The existing creek is channelized along the edge of the valley. Periodic dredging is required, and the channel lacks the geometry expected in a natural stream. Vegetation in the channel is good. Rushes, sedges, and salt grass are reestablishing nicely in disturbed areas. The channel is fair habitat for wildlife.

Development is encroaching on existing wetlands in the valley. This may affect water quality by reducing groundwater recharge and increasing total dissolved solids in stormwater runoff. Inadequate construction site erosion and sediment control result in increased suspended solids in the North Truckee Drain. A 200-300' wide 8' deep flood control channel replaces the existing channel in developing areas. The geometry of the new channel is appropriate, and is revegetating nicely.

Function	al Rating:
A	☐ Proper Functioning Condition
	x Functional – At Risk
	□ Nonfunctional
	□ Unknown
Trend for	r Functional – At Risk
	x Upward
	☐ Downward
	□ Not Apparent
Can facto	ors contributing to unacceptable conditions be controlled by management changes?
	x Yes
	□ No
	□ Unknown
If yes, w	hat are the changes?
G.	CC 4
	nwater runoff treatment ce application of fertilizers, herbicides, and pesticides
	urage riparian buffer zones to replace sod adjacent to streams
	c education
	ce impact from livestock and animal wastes
	ce construction site erosion and sediment control
☐ Contr	rol impacts from vehicles
x Contr	rol building-site encroachment
	rol road encroachment
☐ Other	r <del></del>
Stream F	Restoration is appropriate?
	x Yes
	□ No
	□ Unknown
If yes, w	hat are the recommendations?
x Modi	fy watershed runoff and sediment loads
	channel bottom to reconnect stream to floodplain
	olish grade control structurally
	ove existing riparian corridor vegetation
	te floodplain (excavate)
	e banks to reduce slope failure hazard
	ll durable toe protection
•	ement soil bioengineering
☐ Othe	<b>r-</b>

Name of Riparian-Wetland Area: North Truckee Drain									
Team (	Observe	ers: Mike	e Widmer, Jef	f Jesch	Da	te: 02/06/02			
Reach -	Reach – Landmarks:								
Start	North Truckee Drain enters the Ranch south of Spanish Springs Valley								
Stop	]	North Tru	ickee Drain pa	arallels Sparks B	oulevard				
	Watershed Physical Description – Rosgen Morphological Description (See attached table <sup>1</sup> )								
A	•	В	c	D	E	F	G 5		
Land u						_			
□ wild	U	RBAN X A	GRICULTURAL		□OPEN SPACE	□FLOOD CONTROL	LIOTHER		
Sensiti	Sensitivity to disturbance (See attached table <sup>2</sup> )								
x very high						)W			
Yes	No	N/A			Hydrologic				
	х		Floodplain i	nundated in "rela	tively frequent'	'events (1-3 years	)		
			I						

Yes	No	N/A	Hydrologic
	х		Floodplain inundated in "relatively frequent" events (1-3 years)
	х		Active/stable grade control
	х		Sinuosity, width/depth ratio, and gradient are in balance with the landscape setting (i.e. landform, geology, and bioclimatic region)
	х		Riparian zone is widening
	х		Upland watershed not contributing to riparian degradation

Yes No N		N/A	Water Quality (Pollution Sources)
	х		Land use does not contribute to water quality degradation
	х		Erosion does not degrade water quality
x			Stormwater is not a significant source of water pollution
Х			Fertilizers, pesticides, and herbicides do not impact water quality

Rosgen, Dave. Applied River Morphology. Page 5-5
 Rosgen, Dave. Applied River Morphology. Page 8-9

Yes	No	N/A	Vegetative
	х		Diverse age structure of vegetation
	х		Diverse composition of vegetation
	х		Streambank vegetation is comprised of those plants or plant communities that have root masses capable of withstanding high streamflow events
	х		Riparian plants exhibit high vigor
	х		Adequate vegetative cover present to protect banks and dissipate energy during high flows
	х		Plant communities in the riparian area are an adequate source of coarse and/or large woody debris
		х	Woody vegetation is not removed for flood control

Yes	No	N/A	Erosion Deposition
	х		Floodplain and channel characteristics (i.e., rocks, coarse and/or large woody debris) adequate to dissipate energy)
	x		Point bars are revegetating
	х		Lateral stream movement is associated with natural sinuosity
X			System is vertically stable
	х		Stream is in balance with the water and sediment being supplied by the watershed (i.e., no excessive erosion or deposition)

The North Truckee Drain has a slightly steeper gradient as it flows through the ranch setting. The agricultural property is used to produce hay and cattle. The stream is channelized, and moved to the edge of the valley, to simplify pasture management. Vegetation along the creek provides some wildlife habitat and is mostly pasture grasses with some riparian species at the edge of the channel. The channel is fenced to keep livestock out of the creek. Flood flows can spread out across the pasture without damaging property and would probably not cause significant erosion.

Restoration may be appropriate if the ranch property is developed. This may include excavation to develop an appropriate floodplain and create a meandering low flow channel. Development should not encroach on the channel. High flows should have room to spread out across a wide floodplain without impacting property.

Functional	Rating:  Proper Functioning Condition  Functional – At Risk  Nonfunctional  Unknown	e autorio E	and the second s	46 
Trend for F	Cunctional – At Risk  Upward  Downward  Not Apparent			
Can factors	x Yes No Unknown	controlled by 1	management cha	anges?
If yes, wha	t are the changes?			
☐ Reduce ☐ Encours ☐ Public of x Reduce in x Enforce ☐ Control ☐ Control	impact from livestock and animal wastes construction site erosion and sediment cont impacts from vehicles building-site encroachment road encroachment	cent to streams	S	•
Stream Re	storation is appropriate? x Yes No Unknown			
If yes, wha	at are the recommendations?			
☐ Raise of Establi x Improv x Create :☐ Shape ☐ Install	watershed runoff and sediment loads channel bottom to reconnect stream to floody sh grade control structurally e existing riparian corridor vegetation floodplain (excavate) banks to reduce slope failure hazard durable toe protection nent soil bioengineering	olain		

Name of Riparian-Wetland Area: North Truckee Drain									
Team Obse	Team Observers: Mike Widmer, Jeff Jesch S Date: 02/06/02								
Reach - La	Reach - Landmarks:								
Start	The North Truckee Drain parallels Sparks Boulevard								
Stop	The Nort	h Truckee Drair	n parallels Spar	ks Boulevard		: 			
(See attach A Land use									
Sensitivity to disturbance (See attached table <sup>2</sup> )									
x very hig	н С	⊐ нісн	☐ MODERATE	Low	□ very	LOW			

Yes	No	N/A	Hydrologic
	х		Floodplain inundated in "relatively frequent" events (1-3 years)
х			Active/stable grade control
	х		Sinuosity, width/depth ratio, and gradient are in balance with the landscape setting (i.e. landform, geology, and bioclimatic region)
x			Riparian zone is widening
	x		Upland watershed not contributing to riparian degradation

Yes	No	N/A	Water Quality (Pollution Sources)	
	х		Land use does not contribute to water quality degradation	
	х		Erosion does not degrade water quality	
	х		Stormwater is not a significant source of water pollution	
	х		Fertilizers, pesticides, and herbicides do not impact water quality	
X			Upland watershed not contributing to riparian degradation	

Rosgen, Dave. Applied River Morphology. Page 5-5
 Rosgen, Dave. Applied River Morphology. Page 8-9

Yes	No	N/A	Vegetative	
	х		Diverse age structure of vegetation	
х	х		Diverse composition of vegetation	
	х	-	Streambank vegetation is comprised of those plants or plant communities that have root masses capable of withstanding high streamflow events	
x	х		Riparian plants exhibit high vigor	
	х		Adequate vegetative cover present to protect banks and dissipate energy during high flows	
•	х		Plant communities in the riparian area are an adequate source of coarse and/or large woody debris	
	х		Woody vegetation is not removed for flood control	

Yes	No	N/A	Erosion Deposition
- · · ·	х	·	Floodplain and channel characteristics (i.e., rocks, coarse and/or large woody debris) adequate to dissipate energy)
		х	Point bars are revegetating
	х		Lateral stream movement is associated with natural sinuosity
х			System is vertically stable
х			Stream is in balance with the water and sediment being supplied by the watershed (i.e., no excessive erosion or deposition)

The North Truckee Drain enhances Sparks Boulevard by serving as open space with walking trails and landscaped areas. The channel has a very straight alignment with fairly steep banks. Rock and boulder grade control structures prevent channel incision. Water Quality is poor. The water has a gray-green color and the visibility is about one foot. Construction site and urban stormwater runoff may cause the poor water quality. Vegetation along the channel is poor to fair. Willows, trees, rushes and sedges are doing well in some areas, while in other areas, favorable vegetation is out-competed by Tall Whitetop weeds. It appears that some woody vegetation is removed to improve flood characteristics. Flood flows are conveyed without damage to property and the banks of the channel resist erosion. Vegetation along the channel provides some wildlife habitat.

Restoration may include increasing the width of the floodplain and improving riparian vegetation. Weed abatement should be implemented to control Tall Whitetop and riparian species should be planted.

	Functional Rating:	
	☐ Proper Functioning Condition	$\mathbf{X}_{i_1}$ and $\mathbf{X}_{i_2}$ and $\mathbf{X}_{i_3}$
	x Functional – At Risk	
	☐ Nonfunctional	
	☐ Unknown	
	- Circiowii	
	Trend for Functional – At Risk	
	☐ Upward	
	☐ Downward	
	x Not Apparent	
	Can factors contributing to unacceptable conditions be	e controlled by management changes?
	x Yes	\$
	□ No	
	☐ Unknown	
	If yes, what are the changes?	
	, , , , , , , , , , , , , , , , , , ,	
	x Stormwater runoff treatment	
	Reduce application of fertilizers, herbicides, and p	esticides
	☐ Encourage riparian buffer zones to replace sod adjusted	
	Public education	acent to streams
	Reduce impact from livestock and animal wastes	. •
	☐ Enforce construction site erosion and sediment cor	ntrol
	☐ Control impacts from vehicles	
	☐ Control building-site encroachment	
	☐ Control road encroachment	
	☐ Other —	
	Stream Restoration is appropriate?	
	x Yes	
	No No	
	☐ Unknown	
	If yes, what are the recommendations?	
	x Modify watershed runoff and sediment loads	
•	☐ Raise channel bottom to reconnect stream to flood	lplain
	☐ Establish grade control structurally	
	x Improve existing riparian corridor vegetation	
	x Create floodplain (excavate)	
	☐ Shape banks to reduce slope failure hazard	
		· .
	☐ Install durable toe protection	
	☐ Implement soil bioengineering	
	□ Other –	

Name of Rip	parian-Wetlan	d Area: Nort	h Truckee Dra	in Y		· ·				
Team Obser	Team Observers: Mike Widmer, Jeff Jesch Date: 02/06/02									
Reach - Lar	ndmarks:									
Start	North Truck	ee Drain Pass	ses west of Wil	d Waters						
Stop	North Truckee Drain converges with the Truckee River									
Watershed (See attache A			osgen Morphol	ogical Descript  E	ion F	G5				
		•								
□ WILD □ INDUSTRIAL	URBAN DAGE	UCULTURAL X	COMMERCIAL	OPEN SPACE	x FLOOD CONTROL	. x other,				
Sensitivity	to disturban	e (See attach	ed table <sup>2</sup> )							
x very high	и Он	IGH	□ MODERATE	Low	□ very lo	)W				

Yes	No	N/A	Hydrologic
	X		Floodplain inundated in "relatively frequent" events (1-3 years)
	X		Active/stable grade control
	Х		Sinuosity, width/depth ratio, and gradient are in balance with the landscape setting (i.e. landform, geology, and bioclimatic region)
	X		Riparian zone is widening
	X		Upland watershed not contributing to riparian degradation

Yes	No	N/A	Water Quality (Pollution Sources)	
	X		Land use does not contribute to water quality degradation	
	X Erosion does not degrade water quality		Erosion does not degrade water quality	
····	X		Stormwater is not a significant source of water pollution	
	X	1	Fertilizers, pesticides, and herbicides do not impact water quality	

Rosgen, Dave. Applied River Morphology. Page 5-5
 Rosgen, Dave. Applied River Morphology. Page 8-9

Yes	No	N/A	Vegetative
x			Diverse age structure of vegetation
х	х		Diverse composition of vegetation
	х		Streambank vegetation is comprised of those plants or plant communities that have root masses capable of withstanding high streamflow events
X	х		Riparian plants exhibit high vigor
	х		Adequate vegetative cover present to protect banks and dissipate energy during high flows
	x		Plant communities in the riparian area are an adequate source of coarse and/or large woody debris
		х	Woody vegetation is not removed for flood control

Yes	No	N/A	Erosion Deposition	
•	х		Floodplain and channel characteristics (i.e., rocks, coarse and/or large woody debris) adequate to dissipate energy)	
		х	Point bars are revegetating	
	х		Lateral stream movement is associated with natural sinuosity	
•	х		System is vertically stable	
	х		Stream is in balance with the water and sediment being supplied by the watershed (i.e., no excessive erosion or deposition)	

The channel flows through commercial and industrial properties with very straight alignment and virtually no characteristics of a natural stream. The banks of the channel are very steep and up to 15 feet high. The channel banks are unstable in some areas. This contributes sediment to the channel during flooding and high flows. Willows grow along the banks of the channel and provide some soil reinforcement and wildlife habitat. Water quality is bad. The water has a bad smell and is gray green in color. Bubbles form in eddies and debris floats on the surface. Visibility is about eight inches. A sediment plume is clearly visible where the North Truckee Drain enters the Truckee River. The Sparks Marina Drain converges with the North Truckee Drain. The water quality in the Marina Drain appears to be worse than the North Truckee Drain. Recent grading activities, at the confluence, include installation of culvert headwalls, reshaping and armoring channel banks. The construction includes very steep, unprotected banks that may erode and contribute sediment to the Truckee River during high flows.

Restoration may include reducing the steepness of the channel banks to prevent erosion and encouraging riparian vegetation. A water treatment facility should be considered. Water pollution sources should be investigated and pollution ordinances enforced.

Functional Rating:  Proper Functioning Condition  Functional — At Risk  Nonfunctional  x Unknown
Trend for Functional – At Risk  Upward  Downward  Not Apparent
Can factors contributing to unacceptable conditions be controlled by management changes?  x Yes  No Unknown
If yes, what are the changes?
<ul> <li>x Stormwater runoff treatment</li> <li>x Reduce application of fertilizers, herbicides, and pesticides</li> <li>□ Encourage riparian buffer zones to replace sod adjacent to streams</li> <li>x Public education</li> <li>□ Reduce impact from livestock and animal wastes</li> <li>x Enforce construction site erosion and sediment control</li> <li>□ Control impacts from vehicles</li> <li>□ Control building-site encroachment</li> <li>□ Control road encroachment</li> <li>x Other – enforce stormwater runoff regulations at industrial sites.</li> </ul>
Stream Restoration is appropriate?  x Yes  No  Unknown
If yes, what are the recommendations?
<ul> <li>x Modify watershed runoff and sediment loads</li> <li>☐ Raise channel bottom to reconnect stream to floodplain</li> <li>☐ Establish grade control structurally</li> <li>x Improve existing riparian corridor vegetation</li> <li>x Create floodplain (excavate)</li> <li>x Shape banks to reduce slope failure hazard</li> <li>☐ Install durable toe protection</li> <li>☐ Implement soil bioengineering</li> <li>☐ Other —</li> </ul>

Name of Riparian-Wetland Area: Ophir Creek										
Team Obs	te: 02/07/02									
Reach - La	Reach – Landmarks:									
Start	Ophir	Creek Canyon								
Stop	Alluvial fan transitions to wetland meadow									
x WILD	x wild $\square$ urban $\square$ agricultural $\square$ commercial $\square$ open space $\square$ flood control $\square$ other									
Sensitivity to disturbance (See attached table <sup>2</sup> )										
□ VERY HIC	GH	□нісн	□ MODERATE	Low	x VERY L	OW				

Yes	No	N/A	Hydrologic	
Х	•		Floodplain inundated in "relatively frequent" events (1-3 years)	
x			Active/stable grade control	
х			Sinuosity, width/depth ratio, and gradient are in balance with the landscape setting (i.e. landform, geology, and bioclimatic region)	
х			Riparian zone is widening	
	х		Upland watershed not contributing to riparian degradation	

Yes	No	N/A	Water Quality (Pollution Sources)
x			Land use does not contribute to water quality degradation
х			Erosion does not degrade water quality
x			Stormwater is not a significant source of water pollution
X			Fertilizers, pesticides, and herbicides do not impact water quality

Rosgen, Dave. Applied River Morphology. Page 5-5
 Rosgen, Dave. Applied River Morphology. Page 8-9

Yes	No	N/A	Vegetative
	х		Diverse age structure of vegetation
	х		Diverse composition of vegetation
	х		Streambank vegetation is comprised of those plants or plant communities that have root masses capable of withstanding high streamflow events
X			Riparian plants exhibit high vigor
	х		Adequate vegetative cover present to protect banks and dissipate energy during high flows
	х		Plant communities in the riparian area are an adequate source of coarse and/or large woody debris
X			Woody vegetation is not removed for flood control

Yes	No	N/A	Erosion Deposition
х			Floodplain and channel characteristics (i.e., rocks, coarse and/or large woody debris) adequate to dissipate energy)
х			Point bars are revegetating
х			Lateral stream movement is associated with natural sinuosity
			System is vertically stable
	х		Stream is in balance with the water and sediment being supplied by the watershed (i.e., no excessive erosion or deposition)

Ophir Creek is adapting to the large sediment load discharged during the Price lake-Slide Mountain landslides. The channel flows through boulder and cobble debris, vegetation is slow to emerge due to the lack of suitable soil. Existing vegetation is fair wildlife habitat. Flood flows are able to spread out across the floodplain without causing damage to property. Maintenance will be an ongoing issue as sediment is transported downstream. Culverts, diversions and ditches may become clogged. Water quality is not impacted as sediment is mostly sands that do not become suspended in the creek.

Functional Rating:		
☐ Proper Functioning Condition		- <del></del>
x Functional – At Risk	e e e e e e e e e e e e e e e e e e e	
□ Nonfunctional		
☐ Unknown		
Trend for Functional – At Risk		
x Upward		
☐ Downward		
☐ Not Apparent		
Can factors contributing to unacceptable conditions be c  Yes  No	ontrolled by manag	ement changes?
☐ Unknown		•
If yes, what are the changes?		
☐ Stormwater runoff treatment ☐ Reduce application of fertilizers, herbicides, and pes ☐ Encourage riparian buffer zones to replace sod adjac ☐ Public education ☐ Reduce impact from livestock and animal wastes		A.
☐ Enforce construction site erosion and sediment contr	rol	
☐ Control impacts from vehicles		
☐ Control building-site encroachment		
☐ Control road encroachment		
☐ Other —		
Stream Restoration is appropriate?		
☐ Yes		
x No		
☐ Unknown		
If yes, what are the recommendations?		·
☐ Modify watershed runoff and sediment loads		
☐ Raise channel bottom to reconnect stream to floodpl	lain	
☐ Establish grade control structurally		
☐ Improve existing riparian corridor vegetation		
☐ Create floodplain (excavate)		
☐ Shape banks to reduce slope failure hazard		
☐ Install durable toe protection		
☐ Implement soil bioengineering		
☐ Other —		

Name of Ri	Name of Riparian-Wetland Area: Franktown Creek 🕠									
Team Obser	Team Observers: Jeff Jesch, Keith Weaver Date: 02/07/02									
Reach - Lar	ndmarks:									
Start	Franktov	wn Creek emerg	ges from the can	yon						
Stop	Old High	hway 395 cross	es Franktown Cr	reek						
(See attache		*	Rosgen Morphol		F	G				
x WILD	urban 🗆	AGRICULTURAL	☐ COMMERCIAL	□OPEN SPACE	□FLOOD CONTROL	OTHER				
Sensitivity to disturbance (See attached table <sup>2</sup> )										
□ VERY HIG	н	□ ніGн	□ moderate	Low	x VERY LO	)W				

Yes	No	N/A	Hydrologic
х			Floodplain inundated in "relatively frequent" events (1-3 years)
x			Active/stable grade control
х			Sinuosity, width/depth ratio, and gradient are in balance with the landscape setting (i.e. landform, geology, and bioclimatic region)
x			Riparian zone is widening
			Upland watershed not contributing to riparian degradation

Yes	No	N/A	Water Quality (Pollution Sources)
			Land use does not contribute to water quality degradation
x			Erosion does not degrade water quality
х			Stormwater is not a significant source of water pollution
х			Fertilizers, pesticides, and herbicides do not impact water quality

Rosgen, Dave. Applied River Morphology. Page 5-5
 Rosgen, Dave. Applied River Morphology. Page 8-9

Yes	No	N/A	Vegetative
x			Diverse age structure of vegetation
X			Diverse composition of vegetation
х			Streambank vegetation is comprised of those plants or plant communities that have root masses capable of withstanding high streamflow events
х			Riparian plants exhibit high vigor
х			Adequate vegetative cover present to protect banks and dissipate energy during high flows
X			Plant communities in the riparian area are an adequate source of coarse and/or large woody debris
x			Woody vegetation is not removed for flood control

Yes	No	N/A	Erosion Deposition
х			Floodplain and channel characteristics (i.e., rocks, coarse and/or large woody debris) adequate to dissipate energy)
x			Point bars are revegetating
X			Lateral stream movement is associated with natural sinuosity
х			System is vertically stable
х			Stream is in balance with the water and sediment being supplied by the watershed (i.e., no excessive erosion or deposition)

The reach of Franktown Creek is in good condition. There has been very little human impact, aside from diversions and road building. Vegetation is healthy and provides very good habitat for wildlife. Flood flows have room to expand across the floodplain without impacting property. The rocky soil, dense vegetation, and access to the floodplain prevent high flows from causing erosion. Water quality appears good, however the color has a red tint. This may be from naturally occurring oxidized iron.

Functional Rating:				
x Proper Function		4		** *
☐ Functional – A				
☐ Nonfunctional				
☐ Unknown				
Trend for Functional - At Risl	<b>«</b>			
☐ Upward				
☐ Downward	•			
☐ Not Apparent			•	
Can factors contributing to un	accentable conditions l	he controlled by	management	changes?
Yes	acceptance conditions	oc,controller of		,
□ No	<b>3</b>			
☐ Unknown				
If yes, what are the changes?	:			
☐ Stormwater runoff treatme	nt .			
☐ Reduce application of ferti		pesticides		
☐ Encourage riparian buffer	zones to replace sod ac	djacent to strean	ns	
☐ Public education				
☐ Reduce impact from livest				
☐ Enforce construction site e	rosion and sediment c	ontrol		
☐ Control impacts from vehi				
☐ Control building-site encre				
☐ Control road encroachmen	it			
☐ Other —				
Ct	.:_4_9			
Stream Restoration is appropr  Yes	nate?			
□ No				
☐ Unknown				
If yes, what are the recommen	ıdations?			
☐ Modify watershed runoff	and sediment loads			
☐ Raise channel bottom to re	econnect stream to floo	odplain		
☐ Establish grade control str				
☐ Improve existing riparian	_			
☐ Create floodplain (excava				
☐ Shape banks to reduce slo				
☐ Install durable toe protect				
☐ Implement soil bioengine	ering			
☐ Other —		•		

Name of Ri	Name of Riparian-Wetland Area: Franktown Creek									
Team Obse	Team Observers: Jeff Jesch, Keith Weaver Date: 02/07/02									
Reach - La	ndmark	s:								
Start	Old H	lighway 395 cross	es Franktown Cı	eek						
Stop	Frank	town Creek enters	s Washoe Lake							
(See attache A Land use	ed table	C 5	D	E	F G					
Sensitivity	Sensitivity to disturbance (See attached table <sup>2</sup> )									
□ very hig	Н	х нісн	☐ MODERATE	□ row	□ VERY LOW					

Yes	No	N/A	Hydrologic
х			Floodplain inundated in "relatively frequent" events (1-3 years)
х			Active/stable grade control
x			Sinuosity, width/depth ratio, and gradient are in balance with the landscape setting (i.e. landform, geology, and bioclimatic region)
	х		Riparian zone is widening
х			Upland watershed not contributing to riparian degradation

Yes	No	N/A	Water Quality (Pollution Sources)
	х		Land use does not contribute to water quality degradation
х			Erosion does not degrade water quality
	<u> </u>		Stormwater is not a significant source of water pollution
X			Fertilizers, pesticides, and herbicides do not impact water quality

Rosgen, Dave. Applied River Morphology. Page 5-5
 Rosgen, Dave. Applied River Morphology. Page 8-9

Yes	No	N/A	Vegetative
	х		Diverse age structure of vegetation
	х		Diverse composition of vegetation
X	х	·	Streambank vegetation is comprised of those plants or plant communities that have root masses capable of withstanding high streamflow events
	X		Riparian plants exhibit high vigor
x	х		Adequate vegetative cover present to protect banks and dissipate energy during high flows
	х		Plant communities in the riparian area are an adequate source of coarse and/or large woody debris
		х	Woody vegetation is not removed for flood control

Yes	No	N/A	Erosion Deposition
•		х	Floodplain and channel characteristics (i.e., rocks, coarse and/or large woody debris) adequate to dissipate energy)
x			Point bars are revegetating
x			Lateral stream movement is associated with natural sinuosity
x			System is vertically stable
X			Stream is in balance with the water and sediment being supplied by the watershed (i.e., no excessive erosion or deposition)

The reach of Franktown Creek flows through a low gradient meadow used for cow and horse pasture. The stream has fair to good channel geometry, with the exception of sections that are channelized and used as irrigation ditches. Riparian vegetation is absent, probably due to livestock grazing. Existing vegetation is mostly wetland grass species, which extend from the meadow to the edge of the creek. Livestock trample the banks of the creek in some areas, resulting in bare soil and the risk of erosion. Culverts and road crossings serve as grade control and the channel is vertically stable. The lack of riparian vegetation limits the stream's usefulness as wildlife habitat. Flood flows can spread out across the meadow without damaging property or causing erosion. Only one structure exists near the creek and it does not encroach on the channel.

Functional Rating:
x Proper Functioning Condition
☐ Functional – At Risk
☐ Nonfunctional
☐ Unknown
Trend for Functional – At Risk
☐ Upward
☐ Downward
□ Not Apparent
Can factors contributing to unacceptable conditions be controlled by management changes?
☐ Yes
□ No
☐ Unknown
If yes, what are the changes?
☐ Stormwater runoff treatment
☐ Reduce application of fertilizers, herbicides, and pesticides
☐ Encourage riparian buffer zones to replace sod adjacent to streams
☐ Public education
☐ Reduce impact from livestock and animal wastes
☐ Enforce construction site erosion and sediment control
☐ Control impacts from vehicles
☐ Control building-site encroachment
☐ Control road encroachment
□ Other –
Stream Restoration is appropriate?
☐ Yes
□ No
☐ Unknown
If yes, what are the recommendations?
☐ Modify watershed runoff and sediment loads
Raise channel bottom to reconnect stream to floodplain
☐ Establish grade control structurally
☐ Improve existing riparian corridor vegetation
☐ Create floodplain (excavate)
☐ Shape banks to reduce slope failure hazard
☐ Install durable toe protection
☐ Implement soil bioengineering
□ Other –

Name of Riparian-Wenand Area. Musgrove Creek									
Franktown Road crosses Musgrove Creek									
Watershed Physical Description – Rosgen Morphological Description (See attached table 1)  A B 3 upper C 5 lower D E G									
G									
OTHER-									
Floodplain inundated in "relatively frequent" events (1-3 years)  Active/stable grade control									
Sinuosity, width/depth ratio, and gradient are in balance with the									
landscape setting (i.e. landform, geology, and bioclimatic region)									
Riparian zone is widening Upland watershed not contributing to riparian degradation									

Yes	No	N/A	Water Quality (Pollution Sources)		
	X		Land use does not contribute to water quality degradation		
	Х		Erosion does not degrade water quality		
-	Х		Stormwater is not a significant source of water pollution		
	х		Fertilizers, pesticides, and herbicides do not impact water quality		

Rosgen, Dave. Applied River Morphology. Page 5-5
 Rosgen, Dave. Applied River Morphology. Page 8-9

Yes	No	N/A	Vegetative
1 1 2	X		Diverse age structure of vegetation
	X		Diverse composition of vegetation
	X		Streambank vegetation is comprised of those plants or plant communities that have root masses capable of withstanding high streamflow events
	X		Riparian plants exhibit high vigor
	X		Adequate vegetative cover present to protect banks and dissipate energy during high flows
	X		Plant communities in the riparian area are an adequate source of coarse and/or large woody debris
	х	X	Woody vegetation is not removed for flood control

Yes	No	N/A	Erosion Deposition
	Х		Floodplain and channel characteristics (i.e., rocks, coarse and/or large woody debris) adequate to dissipate energy)
		X	Point bars are revegetating
X			Lateral stream movement is associated with natural sinuosity
X			System is vertically stable
		Х	Stream is in balance with the water and sediment being supplied by the watershed (i.e., no excessive erosion or deposition)

Musgrove Creek enters Washoe Valley in an elite, low-density, urban setting. The creek is relatively undisturbed and has good geometry in the upper reach. The lower reach enters a golf course where the alignment is contrived. Sinuosity is good in the upper and lower reaches. Vegetation is removed in the golf course and sod replaces riparian vegetation. There is a potential for golf course fertilizers and other chemicals to enter the creek. The golf course does not provide riparian wildlife habitat. Sediment and nutrients affect water quality. The Old Highway 395 road swale concentrates irrigation and storm flows, then channels them to the creek. This is a significant source of pollution. Stabilizing the road swale, revegetating channels, establishing riparian buffer zones and fencing livestock from the creeks would benefit water quality.

Functional l	Pating		•		
r uncuonar i	☐ Proper Functioning Condition x Functional — At Risk ☐ Nonfunctional ☐ Unknown				
Trend for F	unctional – At Risk  Upward  Downward  Not Apparent				
Can factors	contributing to unacceptable conditions be contro x Yes □ No □ Unknown	lled by mar	nagement (	hanges?	
If yes, what	are the changes?				
x Reduce x Encoura x Public ex Reduce Enforce x Control Control	ater runoff treatment application of fertilizers, herbicides, and pesticide ge riparian buffer zones to replace sod adjacent to ducation impact from livestock and animal wastes construction site erosion and sediment control impacts from vehicles building-site encroachment road encroachment				
Stream Res	toration is appropriate?  X Yes  □ No □ Unknown				
If yes, what	t are the recommendations?				
☐ Raise cl ☐ Establis x Improve ☐ Create f ☐ Shape b ☐ Install c	watershed runoff and sediment loads hannel bottom to reconnect stream to floodplain th grade control structurally e existing riparian corridor vegetation floodplain (excavate) banks to reduce slope failure hazard lurable toe protection ent soil bioengineering				

Name of Riparian-Wetland Area: Musgrove Creek Date: 02/07/02 Team Observers: Jeff Jesch, Keith Weaver Reach - Landmarks: Old Highway 395 crosses Musgrove Creek Start Musgrove Creek enters Washoe Lake Stop Watershed Physical Description - Rosgen Morphological Description (See attached table<sup>1</sup>) F 5 D Land use  $\square$  WILD X URBAN X AGRICULTURAL  $\square$  COMMERCIAL  $\square$ OPEN SPACE  $\square$ FLOOD CONTROL  $\square$  OTHER Sensitivity to disturbance (See attached table<sup>2</sup>) ☐ VERY LOW ☐ MODERATE LOW □HIGH x VERY HIGH

Yes	No	N/A	Hydrologic
	х		Floodplain inundated in "relatively frequent" events (1-3 years)
x			Active/stable grade control
	х		Sinuosity, width/depth ratio, and gradient are in balance with the landscape setting (i.e. landform, geology, and bioclimatic region)
	х		Riparian zone is widening
х			Upland watershed not contributing to riparian degradation

Yes No N/A Water Quality (Pollution Sources)			Water Quality (Pollution Sources)
		х	Land use does not contribute to water quality degradation
	х		Erosion does not degrade water quality
		Х	Stormwater is not a significant source of water pollution
		х	Fertilizers, pesticides, and herbicides do not impact water quality

<sup>&</sup>lt;sup>1</sup> Rosgen, Dave. Applied River Morphology. Page 5-5

<sup>&</sup>lt;sup>2</sup> Rosgen, Dave. Applied River Morphology. Page 8-9

Yes	No	N/A	Vegetative
X			Diverse age structure of vegetation
	х		Diverse composition of vegetation
- "	х	12.	Streambank vegetation is comprised of those plants or plant communities that have root masses capable of withstanding high streamflow events
Х			Riparian plants exhibit high vigor
	х		Adequate vegetative cover present to protect banks and dissipate energy during high flows
	х		Plant communities in the riparian area are an adequate source of coarse and/or large woody debris
	х		Woody vegetation is not removed for flood control

Yes	No	N/A	Erosion Deposition
	х		Floodplain and channel characteristics (i.e., rocks, coarse and/or large woody debris) adequate to dissipate energy)
	х		Point bars are revegetating
	х	-	Lateral stream movement is associated with natural sinuosity
Х			System is vertically stable
		Х	Stream is in balance with the water and sediment being supplied by the watershed (i.e., no excessive erosion or deposition)

The creek is channelized with very straight alignment through small ranches and low density urban development. It is entrenched about five feet and the banks are near vertical. Homes, ranch structures and fences encroach on the stream. Evidence of dredging and vegetation removal was observed. Water quality appears good, however, the incised channel may be affected by adjacent septic leach fields and animal wastes from grazing and horses. Bank erosion during high flows contributes sediment to the creek. It appears that flooding is controlled by continually dredging the channel. This prevents healthy riparian vegetation from reestablishing and inhibits the natural rejuvenation process of the channel morphology. Willows, perched at the top of the channel banks, appear healthy and provide habitat for wildlife.

Some of the Musgrove Creek flows are diverted through a golf course. The diverted channel has good sinuosity and high flows may come out of bank to access the floodplain. Riparian vegetation is absent within the golf course boundary. Since turf grows adjacent to the banks of the creek with no riparian buffer zone, fertilizers, herbicides and pesticides are not filtered before entering the creek.

Functional Rating:			
☐ Proper Functioning Condition	· <del>*</del> *	177	
☐ Functional – At Risk			
x Nonfunctional			
☐ Unknown			
Trend for Functional – At Risk			
☐ Upward			
☐ Downward			
x Not Apparent			
	tions he seemalled b		nent changes?
Can factors contributing to unacceptable condi	tions de controlled d	y managen	Helit changes:
x Yes			
□ No			
☐ Unknown			
If yes, what are the changes?			
☐ Stormwater runoff treatment			
x Reduce application of fertilizers, herbicides	, and pesticides		
x Encourage riparian buffer zones to replace s		ms	
x Public education			
x Reduce impact from livestock and animal w	ractec		
☐ Enforce construction site erosion and sedim			
	icht control		
☐ Control impacts from vehicles			
x Control building-site encroachment			
☐ Control road encroachment			
☐ Other —			
Stream Restoration is appropriate?			
x Yes			
□ No			
□ Unknown			
If yes, what are the recommendations?			
ii yes, what are the recommendations.			
☐ Modify watershed runoff and sediment loa	de		
•			
Raise channel bottom to reconnect stream	w moodplam		
☐ Establish grade control structurally			
x Improve existing riparian corridor vegetation	on		
x Create floodplain (excavate)			
x Shape banks to reduce slope failure hazard			
☐ Install durable toe protection			
☐ Implement soil bioengineering			
☐ Other —			

Name	of Rip	arian-Wet	land Area: Jui	mbo Creek		· · · · · · · · · · · · · · · · · · ·		
Team (	Observ	ers: Jeff	Jesch		Date: 01/27/02			
Reach	– Land	dmarks:						
Start		Aggregat	e pit on Jumbo	Grade Road			·	
Stop				mile east of Ea	st Lake Blvd.			
Stop	L		<u> , , , , , , , , , , , </u>					
		P <b>hysical I</b> l table <sup>1</sup> )	Description – l	Rosgen Morpho	logical Descript	tion		
A	<u>-</u>	В	c <u>.</u>	D	E	F	G 4&:5	
x WILD ROAD V Sensiti	U U EHICLI	o disturb	agricultural  ance (See attac			□FLOOD CONTR		
Yes	No	N/A	<del> </del>		Hydrologic			
1 63	X	14/74	Floodplain in	undated in "rela		'events (1-3 yea	ers)	
	x			grade control				
	х		<del></del>		and gradient are	e in balance with	the	
			landscape set	ting (i.e. landfor	m, geology, an	d bioclimatic reg	gion)	
	X.		Riparian zone					
	х		Upland water	shed not contrib	outing to riparia	n degradation		
Yes	No	N/A		Water Qu	ality (Pollutio	n Sources)		
	х		Land use doe	s not contribute	to water quality	y degradation		
	х			not degrade wa				
х			Stormwater is not a significant source of water pollution					

Fertilizers, pesticides, and herbicides do not impact water quality

<sup>&</sup>lt;sup>1</sup> Rosgen, Dave. Applied River Morphology. Page 5-5

<sup>&</sup>lt;sup>2</sup> Rosgen, Dave. Applied River Morphology. Page 8-9

Yes	No	N/A	Vegetative
<del></del>	x		Diverse age structure of vegetation
	X.		Diverse composition of vegetation
	х		Streambank vegetation is comprised of those plants or plant communities that have root masses capable of withstanding high streamflow events
	х		Riparian plants exhibit high vigor
	х		Adequate vegetative cover present to protect banks and dissipate energy during high flows
x			Plant communities in the riparian area are an adequate source of coarse and/or large woody debris
х			Woody vegetation is not removed for flood control

Yes	No	N/A	Erosion Deposition
	х		Floodplain and channel characteristics (i.e., rocks, coarse and/or large woody debris) adequate to dissipate energy)
	х		Point bars are revegetating
	х		Lateral stream movement is associated with natural sinuosity
	х		System is vertically stable
	х		Stream is in balance with the water and sediment being supplied by the watershed (i.e., no excessive erosion or deposition)

Jumbo Creek flows through a relatively steep canyon and is undeveloped along this reach. The area is used for recreation, off road vehicles and there is a soil and aggregate pit. A road parallels the creek that has existed since the Virginia City mining days. Vertical instability and steep channel banks are the result of road encroachment on the creek. The soil is very erodable and sediment is carried downstream during high storm flows. Off-road vehicle use accelerates erosion by concentrating and direction sheet flows to the creek.

The channel is unstable during periods of high flows, and erosion reduces water quality. Riparian vegetation is perched on the steep banks of the channel. Roots have difficulty reaching the low water table and new vegetation cannot take hold along the eroding channel bottom. Existing riparian vegetation is good wildlife habitat, but as the water table recedes, the willows are impacted.

Restoration opportunities may include excavation that develops an active floodplain. Reducing the steepness of the channel banks will prevent erosion and improve revegetation potential. Bioengineering solutions, that use vegetation to stabilize the channel, can also be implemented.

Functional Rating:	e 8°
☐ Proper Functioning Condition	en e
☐ Functional – At Risk	
x Nonfunctional	
☐ Unknown	
Trend for Functional – At Risk	
Upward	
x Downward	
□ Not Apparent	
	. 1 0
Can factors contributing to unacceptable conditions be controlled by	management changes?
x Yes	
□ No	
☐ Unknown	
If yes, what are the changes?	
FI 0	
Stormwater runoff treatment	
Reduce application of fertilizers, herbicides, and pesticides	<b></b>
☐ Encourage riparian buffer zones to replace sod adjacent to stream x Public education	iis
☐ Reduce impact from livestock and animal wastes ☐ Enforce construction site erosion and sediment control	
x Control impacts from vehicles	
☐ Control building-site encroachment	
x Control road encroachment	
Other —	
- Jake	
Stream Restoration is appropriate?	
x Yes	
□ No	
□ Unknown	
If yes, what are the recommendations?	
☐ Modify watershed runoff and sediment loads	
x Raise channel bottom to reconnect stream to floodplain	
x Establish grade control structurally	
x Improve existing riparian corridor vegetation	
x Create floodplain (excavate)	
x Shape banks to reduce slope failure hazard	
x Install durable toe protection	
x Implement soil bioengineering	
□ Other	

Name of I	Riparian-	Wetland Area:	Jumbo Creek	, 1		
Team Obs	servers: .	leff Jesch		Date: 01/27/02		
Reach - L	andmark	s:				
Start	Resid	ential area abou	it ½ mile east of Ea	ast Lake Blvd.	***	
Stop	Jumb	o Creek enters	Washoe Lake	<u> </u>		
Watershe (See attack A Land use	hed table B	···	– Rosgen Morpho D		r	<b>G</b> 5
□ WILD	X URBAN	AGRICULTUR	AL COMMERCIAL	□OPEN SPACE	x FLOOD CONTROL	OTHER
Sensitivit	y to dist	urbance (See a	ttached table <sup>2</sup> )			
x extreme		Пнісн	□ moderate	□LOW	□ VERY LO	O₩

Yes	No	N/A	Hydrologic
	х		Floodplain inundated in "relatively frequent" events (1-3 years)
x			Active/stable grade control
	х		Sinuosity, width/depth ratio, and gradient are in balance with the landscape setting (i.e. landform, geology, and bioclimatic region)
	х		Riparian zone is widening
	х		Upland watershed not contributing to riparian degradation

Yes	No	N/A	Water Quality (Pollution Sources)
	х		Land use does not contribute to water quality degradation
	х		Erosion does not degrade water quality
	х	1.	Stormwater is not a significant source of water pollution
X		7	Fertilizers, pesticides, and herbicides do not impact water quality

Rosgen, Dave. Applied River Morphology. Page 5-5
 Rosgen, Dave. Applied River Morphology. Page 8-9

Yes	No	N/A	Vegetative
	х		Diverse age structure of vegetation
	х		Diverse composition of vegetation
	X	·	Streambank vegetation is comprised of those plants or plant communities that have root masses capable of withstanding high streamflow events
	х		Riparian plants exhibit high vigor
	х		Adequate vegetative cover present to protect banks and dissipate energy during high flows
	X		Plant communities in the riparian area are an adequate source of coarse and/or large woody debris
- :		х	Woody vegetation is not removed for flood control

Yes	No	N/A	Erosion Deposition
	Х		Floodplain and channel characteristics (i.e., rocks, coarse and/or large woody debris) adequate to dissipate energy)
	х		Point bars are revegetating
	х		Lateral stream movement is associated with natural sinuosity
		х	System is vertically stable
		х	Stream is in balance with the water and sediment being supplied by the watershed (i.e., no excessive erosion or deposition)

Jumbo Creek has a very straight alignment through residential lots and along the Jumbo Grade Road. The creek was pushed to the property lines to economize development, the road shoulder forms the south bank of the creek. West of East Lake Boulevard, the channel was reshaped, armored and grade control structures were installed to control flooding and erosion. Improvements to the channel extent west from East Lake Boulevard, about ½ mile. Downstream of the improvements, Jumbo creek is channelized along roadways before it enters Washoe Lake. This reach of Jumbo Creek is characterized by straight alignment, steep banks that erode, and a channel that is vertically unstable. The lack of vegetation does not provide habitat for wildlife and erosion impacts water quality. There is a risk of damage to property and the environment from flooding. The channel does not possess any characteristics of a natural functioning stream.

Options for restoration are limited due to encroachment from residential lots and roads. Installing grade control structures and establishing riparian vegetation may improve wildlife habitat, reduce the risk of flood damage and prevent erosion. Care should be taken when constructing these structures to ensure they do not become outflanked by storm flows.

Functional Rating:  Proper Functioning Condition  Functional – At Risk  X Nonfunctional  Unknown	
Trend for Functional – At Risk  ☐ Upward  x Downward ☐ Not Apparent	
Can factors contributing to unacceptable conditions be controlled by management changes?  x Yes  □ No □ Unknown	
If yes, what are the changes?	
☐ Stormwater runoff treatment ☐ Reduce application of fertilizers, herbicides, and pesticides ☐ Encourage riparian buffer zones to replace sod adjacent to streams ☐ Public education ☐ Reduce impact from livestock and animal wastes ☐ Enforce construction site erosion and sediment control ☐ Control impacts from vehicles x Control building-site encroachment x Control road encroachment ☐ Other —	
Stream Restoration is appropriate?  x Yes  No Unknown	
If yes, what are the recommendations?	
<ul> <li>Modify watershed runoff and sediment loads</li> <li>x Raise channel bottom to reconnect stream to floodplain</li> <li>x Establish grade control structurally</li> <li>x Improve existing riparian corridor vegetation</li> <li>x Create floodplain (excavate)</li> <li>x Shape banks to reduce slope failure hazard</li> <li>x Install durable toe protection</li> <li>x Implement soil bioengineering</li> <li>□ Other −</li> </ul>	

Name of Rip	parian-W	etland Area	: Evans Creek	, and a second second	*** * *	
Team Obser	vers: Je	ff Jesch, Ber	n Jesch	Da	te: 10/09/02	
Reach - Lar	ndmarks:					·
Start	2000 fe	et west of th	ne confluence of Sou	th and North Ev	vans Creek	<del></del>
Stop	Lakesic	de Drive cros	sses Evans Creek			
(See attached A Land use x WILD x U	ed table <sup>1</sup> ) B2&3a  JRBAN	C	D  TRAL □ COMMERCIAL  attached table <sup>2</sup> )	E	F	G
□ very hig	н	□ ніgн	☐ MODERATE	x LOW	□ VERY LC	<b>₩</b>

Yes	No	N/A	Hydrologic
x			Floodplain inundated in "relatively frequent" events (1-3 years)
x			Active/stable grade control
х			Sinuosity, width/depth ratio, and gradient are in balance with the landscape setting (i.e. landform, geology, and bioclimatic region)
		х	Riparian zone is widening
x			Upland watershed not contributing to riparian degradation

Yes	No	N/A	Water Quality (Pollution Sources)
x			Land use does not contribute to water quality degradation
x	<u> </u>		Erosion does not degrade water quality
x			Stormwater is not a significant source of water pollution
X			Fertilizers, pesticides, and herbicides do not impact water quality
X			Upland watershed not contributing to riparian degradation

Rosgen, Dave. Applied River Morphology. Page 5-5
 Rosgen, Dave. Applied River Morphology. Page 8-9

Yes	No	N/A	Vegetative
X			Diverse age structure of vegetation
Х			Diverse composition of vegetation
x			Streambank vegetation is comprised of those plants or plant communities that have root masses capable of withstanding high streamflow events
x			Riparian plants exhibit high vigor
х			Adequate vegetative cover present to protect banks and dissipate energy during high flows
x			Plant communities in the riparian area are an adequate source of coarse and/or large woody debris
х			Woody vegetation is not removed for flood control

Yes	No	N/A	Erosion Deposition
х			Floodplain and channel characteristics (i.e., rocks, coarse and/or large woody debris) adequate to dissipate energy)
X			Point bars are revegetating
X			Lateral stream movement is associated with natural sinuosity
X			System is vertically stable
х			Stream is in balance with the water and sediment being supplied by the watershed (i.e., no excessive erosion or deposition)

Evans Creek flows through medium density residential developments along this reach. The relatively undisturbed stream corridor is lined with dense vegetation that serves as excellent wildlife habitat. Homes and fences do not encroach on the stream system. Water quality is good. Rocks, Boulders, vegetation and root structures resist erosion. The channel appears to be capable of conveying anticipated flood flows without damage to the environment or property. Segments of pedestrian trails exist along the creek, and an extensive trail system lies within the Washoe County-Bartly Ranch Park just down stream. Planners should encourage continuing the existing trails. This helps connect the community to the watershed. Native vegetation should be preserved and not replaced with sod and landscape species.

Flows are diverted from Evans Creek and routed to the Lake Ridge Subdivision. Roads and ditches cross the stream in several locations. Some erosion is associated with the crossings, however, the durable characteristics of the channel limit the extent of disturbance. A five-foot deep head cut was observed, and its effect was dissipated within about 500 lineal feet. It appears the head cut was naturally occurring. A real-estate sigh indicates the potential for development upstream.

Functional Rating:		# *** # ***	
x Proper Functioning Con	dition		
☐ Functional – At Risk			
☐ Nonfunctional			
☐ Unknown			
		•	
Trend for Functional – At Risk			
☐ Upward			
☐ Downward			
□ Not Apparent			
Can factors contributing to unacceptabl	e conditions be co	ontrolled by mana	gement changes?
☐ Yes			
□ No			
□ Unknown			
E Chanown			
If yes, what are the changes?			
11 yes, what are the changes:			•
☐ Stormwater runoff treatment			
☐ Reduce application of fertilizers, he	rhiaides and nesti	icides	
☐ Encourage riparian buffer zones to ☐ Public education	replace sod adjace	in to su cams	
☐ Reduce impact from livestock and a			
☐ Enforce construction site erosion an	id sediment contro	)1	
☐ Control impacts from vehicles			
☐ Control building-site encroachment	, !		
☐ Control road encroachment			
☐ Other —			
Stream Restoration is appropriate?			
☐ Yes			
□ No			
☐ Unknown			
If yes, what are the recommendations?			
☐ Modify watershed runoff and sedin	nent loads		
☐ Raise channel bottom to reconnect	stream to floodpla	in	
☐ Establish grade control structurally	•		
☐ Improve existing riparian corridor			
☐ Create floodplain (excavate)	-6		
☐ Shape banks to reduce slope failure	hazard		
☐ Install durable toe protection	, smeare		
• • • • • • • • • • • • • • • • • • •			
☐ Implement soil bioengineering			
Other –	•		

Name of Rip	parian-	Wetland Area: Ev	ans Creek	ap.c.	- 3					
Team Observers: Mike Widmer, Jeff Jesch, Keith Weaver Date: 01/09/02										
Reach - Lar	ıdmark	s:								
Start	art Lakeside Drive crosses Evans Creek									
Stop	Highway 395 crosses Evans Creek									
(See attache		· ·	7	logical Descript  E		<b>G</b> 3				
Land use										
□ WILD □	URBAN	XAGRICULTURAL		X OPEN SPACE	X FLOOD CONTRO	OL OTHER				
Sensitivity	to dist	urbance (See atta	ched table <sup>2</sup> )							
X very high	I	□нісн	□ moderate	Low	□ very 1	LOW				

Yes	No	N/A	Hydrologic
	х		Floodplain inundated in "relatively frequent" events (1-3 years)
	х		Active/stable grade control
	х		Sinuosity, width/depth ratio, and gradient are in balance with the landscape setting (i.e. landform, geology, and bioclimatic region)
	х		Riparian zone is widening
х			Upland watershed not contributing to riparian degradation

Yes	No	N/A	Water Quality (Pollution Sources)
	х		Land use does not contribute to water quality degradation
	х		Erosion does not degrade water quality
х			Stormwater is not a significant source of water pollution
х			Fertilizers, pesticides, and herbicides do not impact water quality

Rosgen, Dave. Applied River Morphology. Page 5-5
 Rosgen, Dave. Applied River Morphology. Page 8-9

Yes	No	N/A	Vegetative
	х		Diverse age structure of vegetation
	х		Diverse composition of vegetation
	х		Streambank vegetation is comprised of those plants or plant communities that have root masses capable of withstanding high streamflow events
	х		Riparian plants exhibit high vigor
	х		Adequate vegetative cover present to protect banks and dissipate energy during high flows
	х		Plant communities in the riparian area are an adequate source of coarse and/or large woody debris
	<u> </u>	х	Woody vegetation is not removed for flood control

Yes	No	N/A	Erosion Deposition
	х		Floodplain and channel characteristics (i.e., rocks, coarse and/or large woody debris) adequate to dissipate energy)
	х		Point bars are revegetating
	х		Lateral stream movement is associated with natural sinuosity
	х		System is vertically stable
	х		Stream is in balance with the water and sediment being supplied by the watershed (i.e., no excessive erosion or deposition)

Evans Creek flows through a public park and small ranches in this reach. The creek is channelized in a straight alignment to economize land use and improve flood flows. The stream banks are vertically unstable and the channel is widening. High stream flows and flooding have caused property damage and erosion in the past. Flood events overtop banks in about ten year intervals. Existing trees and shrubs have exposed roots and trees lean due to soil loss around roots. The lack of vegetation causes thermal pollution and wildlife habitat is not available. The channel characteristics do not promote aquatic life.

Based on the site characteristics, stream restoration may be appropriate. Much of the property is located on publicly owned land within a park setting. The public could potentially support a restoration project that would provide watershed education, wildlife habitat, pedestrian trails and an example of natural functioning and natural appearing stream restoration. A stream restoration is under construction, on Evans Creek, Just upstream of Highway 395 and a second, adjacent, restoration is in the planning stage.

Functional Rating:		
☐ Proper Functioning Condition	42 W - 7	
☐ Functional – At Risk		
X Nonfunctional  Unknown		
Li Unknown		
Trend for Functional – At Risk		
☐ Upward		
X Downward		
☐ Not Apparent		
Can factors contributing to unacceptable conditions be	controlled by mana	gement changes?
X Yes	, , , , , , , , , , , , , , , , , , ,	,
□ No		
☐ Unknown		
,		
If yes, what are the changes?		
☐ Stormwater runoff treatment		
☐ Reduce application of fertilizers, herbicides, and pe	esticides	
☐ Encourage riparian buffer zones to replace sod adja		
X Public education		
X Reduce impact from livestock and animal wastes		
☐ Enforce construction site erosion and sediment con	trol	
☐ Control impacts from vehicles		
☐ Control building-site encroachment		
☐ Control road encroachment		
□ Other –		
Stream Restoration is appropriate?		
X Yes		, .
□ No		
□ Unknown		
If yes, what are the recommendations?		
☐ Modify watershed runoff and sediment loads		
Raise channel bottom to reconnect stream to flood	plain	
☐ Establish grade control structurally	-	
X Improve existing riparian corridor vegetation		
X Create floodplain (excavate)		
X Shape banks to reduce slope failure hazard		•
☐ Install durable toe protection		
X Implement soil bioengineering		•.
□ Other –		

Name of R	iparian-Wet	land Area: Eva	ans Creek			
Team Obse	ervers: Mike	e Widmer, Jef	f Jesch, Keith W	eaver Da	te: 01/16/02	
Reach - La	ındmarks:					
Start	South Vir	ginia crosses	Evans Creek nea	r the Shell Stat	ion	
Stop	Evans Cr	eek converges	with Dry Creek	near the Sierra	Pacific Building	
(See attach	ed table <sup>1</sup> )	Description — I	Rosgen Morpho D	logical Descrip		G
Land use		,	_			
□ WILD □	URBAN 🗆	AGRICULTURAL	☐ COMMERCIAL	X OPEN SPACE	X FLOOD CONTRO	L LI OTHER
Sensitivity	to disturb	ance (See attac	ched table <sup>2</sup> )			
X very hig	н С	] нісн	☐ moderate	Low	□ VERY L	O₩
·						

Yes	No	N/A	Hydrologic
х			Floodplain inundated in "relatively frequent" events (1-3 years)
х			Active/stable grade control
	х		Sinuosity, width/depth ratio, and gradient are in balance with the landscape setting (i.e. landform, geology, and bioclimatic region)
		х	Riparian zone is widening
	х		Upland watershed not contributing to riparian degradation

Yes	No	N/A	Water Quality (Pollution Sources)
	х		Land use does not contribute to water quality degradation
х			Erosion does not degrade water quality
	х		Stormwater is not a significant source of water pollution
X			Fertilizers, pesticides, and herbicides do not impact water quality

Rosgen, Dave. Applied River Morphology. Page 5-5
 Rosgen, Dave. Applied River Morphology. Page 8-9

Yes	No	N/A	Vegetative
	X.		Diverse age structure of vegetation
	·x		Diverse composition of vegetation
	х		Streambank vegetation is comprised of those plants or plant communities that have root masses capable of withstanding high streamflow events
	х		Riparian plants exhibit high vigor
	х		Adequate vegetative cover present to protect banks and dissipate energy during high flows
	х		Plant communities in the riparian area are an adequate source of coarse and/or large woody debris
	х		Woody vegetation is not removed for flood control

Yes	No	N/A	Erosion Deposition
	х	х	Floodplain and channel characteristics (i.e., rocks, coarse and/or large woody debris) adequate to dissipate energy)
	х		Point bars are revegetating
	х		Lateral stream movement is associated with natural sinuosity
Х			System is vertically stable
	х		Stream is in balance with the water and sediment being supplied by the watershed (i.e., no excessive erosion or deposition)

The creek is confined in a wide flood control channel as it flows through commercial properties in relatively flat terrain. The straight alignment, lack of riparian vegetation and hard armoring limit the channels natural characteristics. Woody vegetation is removed to improve flood flows. This reduces the usefulness of the stream for wildlife habitat. Water quality is impacted by land uses upstream, that include; animal waste, poorly functioning individual septic systems, soil erosion, and stormwater runoff from commercial properties. Water visibility is poor and algae is observed growing in the creek. The channel design appears adequate to convey flood flows without damage to property.

Establishing woody riparian vegetation and realignment of the low flow channel would improve the appearance of the channel and improve wildlife habitat. This may also provide water quality benefits. Upstream impacts should also be addressed.

Functional Rating:  Proper Functionin  Functional – At R  Nonfunctional  Unknown	
Trend for Functional – At Risk  ☐ Upward  x Downward  ☐ Not Apparent	
Can factors contributing to unacc x Yes □ No □ Unknown	ceptable conditions be controlled by management changes?
If yes, what are the changes?	
x Stormwater runoff treatment ☐ Reduce application of fertilize ☐ Encourage riparian buffer zon ☐ Public education x Reduce impact from livestock x Enforce construction site erosi ☐ Control impacts from vehicle x Control building-site encroach ☐ Control road encroachment ☐ Other —	and animal wastes ion and sediment control
Stream Restoration is appropriate x Yes ☐ No ☐ Unknown	e?
If yes, what are the recommenda	tions?
x Modify watershed runoff and ☐ Raise channel bottom to reco ☐ Establish grade control struct x Improve existing riparian corr ☐ Create floodplain (excavate) x Shape banks to reduce slope f ☐ Install durable toe protection x Implement soil bioengineering x Other – restore the entire reac riparian vegetation.	onnect stream to floodplain turally ridor vegetation railure hazard

Name of	Riparian-V	Wetland Area: Dry	Creek ①	j.	e de Se	
Team Ob	servers: N	Aike Widmer, Jeff	Jesch, Keith W	eaver Date:	01/10/02	
Reach -	Landmarks	s:	•			
Start	Three Drive		ries in Undistu	bed areas abou	t one mile west of	Lakeside
Stop	Lakes	ide Drive crosses I	Ory Creek Tribu	taries	· .	
(See atta	ched table	c	D	E	F	<b>G</b>
	ched table	al Description – R	-			
Land us	e					
x WILD	☐ urban	☐ AGRICULTURAL	COMMERCIAL	OPEN SPACE	☐FLOOD CONTROL	OTHER
Sensitiv	ity to dist	ırbance (See attac	hed table <sup>2</sup> )			
□ very i	HIGH	□нісн	MODERATE	Low	x VERY LO	W

Yes	No	N/A	Hydrologic
х			Floodplain inundated in "relatively frequent" events (1-3 years)
		х	Active/stable grade control
х			Sinuosity, width/depth ratio, and gradient are in balance with the landscape setting (i.e. landform, geology, and bioclimatic region)
X			Riparian zone is widening
x			Upland watershed not contributing to riparian degradation

Yes	No	N/A	Water Quality (Pollution Sources)
х			Land use does not contribute to water quality degradation
х			Erosion does not degrade water quality
X			Stormwater is not a significant source of water pollution
X			Fertilizers, pesticides, and herbicides do not impact water quality

Rosgen, Dave. Applied River Morphology. Page 5-5
 Rosgen, Dave. Applied River Morphology. Page 8-9

Yes	No	N/A	Vegetative
	х		Diverse age structure of vegetation
x			Diverse composition of vegetation
х			Streambank vegetation is comprised of those plants or plant communities that have root masses capable of withstanding high streamflow events
x			Riparian plants exhibit high vigor
х			Adequate vegetative cover present to protect banks and dissipate energy during high flows
х			Plant communities in the riparian area are an adequate source of coarse and/or large woody debris
x			Woody vegetation is not removed for flood control

Yes	No	N/A	Erosion Deposition
Х			Floodplain and channel characteristics (i.e., rocks, coarse and/or large woody debris) adequate to dissipate energy)
x			Point bars are revegetating
X			Lateral stream movement is associated with natural sinuosity
X			System is vertically stable
X			Stream is in balance with the water and sediment being supplied by the watershed (i.e., no excessive erosion or deposition)

The three tributaries flow through steep canyons in the alluvial fan setting. The south and middle reaches are relatively undisturbed and not influenced by urban development. A recent fire, summer of 1999, swept through the riparian vegetation along all three tributary channels. Vegetation recovery is robust along the channels, and the rocky soil and existing root structure prevents erosion.

Many property owners, along the north tributary, have developed ponds along the channel. Vegetation along the north channel is mostly special landscape species and very little undisturbed channel exists.

The stream channel corridors have relatively stable characteristics. The riparian areas are well suited for pedestrian trails and open space. This should be considered when planning for urban development.

x Proper Functioning Condition    Functional - At Risk   Nonfunctional   Unknown
Trend for Functional – At Risk  Upward  Downward  Not Apparent
Can factors contributing to unacceptable conditions be controlled by management changes?  Yes  No Unknown
If yes, what are the changes?
□ Stormwater runoff treatment □ Reduce application of fertilizers, herbicides, and pesticides □ Encourage riparian buffer zones to replace sod adjacent to streams □ Public education □ Reduce impact from livestock and animal wastes □ Enforce construction site erosion and sediment control □ Control impacts from vehicles □ Control building-site encroachment □ Control road encroachment □ Other —
Stream Restoration is appropriate?  ☐ Yes ☐ No ☐ Unknown
If yes, what are the recommendations?
<ul> <li>☐ Modify watershed runoff and sediment loads</li> <li>☐ Raise channel bottom to reconnect stream to floodplain</li> <li>☐ Establish grade control structurally</li> <li>☐ Improve existing riparian corridor vegetation</li> <li>☐ Create floodplain (excavate)</li> <li>☐ Shape banks to reduce slope failure hazard</li> <li>☐ Install durable toe protection</li> <li>☐ Implement soil bioengineering</li> <li>☐ Other —</li> </ul>

Name of Ri	parian-Wetlar	nd Area: Dry	Creek	syma.				
Team Obser	Team Observers: Mike Widmer, Jeff Jesch, Keith Weaver Date: 01/10/02							
Reach - Lar	ndmarks:							
Start	South, Mide	ile and North	Tributaries of	Dry Creek cros	s Lakeside Drive			
Stop	South Virgi	nia Street cros	ses Dry Creek					
	Watershed Physical Description – Rosgen Morphological Description (See attached table 1)  A B C D E F G 4&5							
Land use	Land use							
□ WILD □ URBAN X AGRICULTURAL □ COMMERCIAL □ OPEN SPACE □ FLOOD CONTROL X OTHER Small ranches from 2.5 to 10 acres.								
Sensitivity to disturbance (See attached table <sup>2</sup> )								

Yes	No	N/A	Hydrologic
	х		Floodplain inundated in "relatively frequent" events (1-3 years)
	х		Active/stable grade control
	х		Sinuosity, width/depth ratio, and gradient are in balance with the landscape setting (i.e. landform, geology, and bioclimatic region)
	х		Riparian zone is widening
×	Upland watershed not contributing to riparian degradation		

☐ MODEORATE

 $\square$  LOW

☐ VERY LOW

Yes	No	N/A	Water Quality (Pollution Sources)
	х		Land use does not contribute to water quality degradation
	х		Erosion does not degrade water quality
	x	\ <u></u>	Stormwater is not a significant source of water pollution
X			Fertilizers, pesticides, and herbicides do not impact water quality

☐ HIGH

x very high

Rosgen, Dave. Applied River Morphology. Page 5-5
 Rosgen, Dave. Applied River Morphology. Page 8-9

Yes	No	N/A	Vegetative
	х		Diverse age structure of vegetation
	х		Diverse composition of vegetation
	х		Streambank vegetation is comprised of those plants or plant communities that have root masses capable of withstanding high streamflow events
	х		Riparian plants exhibit high vigor
	х		Adequate vegetative cover present to protect banks and dissipate energy during high flows
	х	-	Plant communities in the riparian area are an adequate source of coarse and/or large woody debris
		х	Woody vegetation is not removed for flood control

Yes	No	N/A	Erosion Deposition
	х		Floodplain and channel characteristics (i.e., rocks, coarse and/or large woody debris) adequate to dissipate energy)
<del></del>	х		Point bars are revegetating
	х		Lateral stream movement is associated with natural sinuosity
	х		System is vertically stable
	х		Stream is in balance with the water and sediment being supplied by the watershed (i.e., no excessive erosion or deposition)

Three tributaries of Dry Creek flow through small ranches that range from 2.5 to 10 acres. Impact from livestock grazing is intense along the riparian corridor. Numerous dams exist along the channels. The structures often result in downstream erosion and sediment deposition.

The channel has a high potential to recover if the current impact is reduced. Management changes such as fencing riparian areas and better livestock management could potentially improve the stream corridor. Enforcement of existing ordinances and public education may reduce impact on the stream.

Functional Rating:  Proper Functioning Condition
☐ Functional – At Risk
x Nonfunctional
☐ Unknown
Trend for Functional – At Risk
☐ Upward
x Downward
☐ Not Apparent
Can factors contributing to unacceptable conditions be controlled by management changes?
x Yes
□ No
☐ Unknown
If yes, what are the changes?
x Stormwater runoff treatment
Reduce application of fertilizers, herbicides, and pesticides
x Encourage riparian buffer zones to replace sod adjacent to streams
x Public education
x Reduce impact from livestock and animal wastes x Enforce construction site erosion and sediment control
Control impacts from vehicles
☐ Control building-site encroachment
☐ Control road encroachment
☐ Other —
Stream Restoration is appropriate?
x Yes □ No
□ Unknown
Li Olikilowii
If yes, what are the recommendations?
☐ Modify watershed runoff and sediment loads
☐ Raise channel bottom to reconnect stream to floodplain
☐ Establish grade control structurally
x Improve existing riparian corridor vegetation
☐ Create floodplain (excavate)
x Shape banks to reduce slope failure hazard
☐ Install durable toe protection
x Implement soil bioengineering
□ Other –

Name (	Name of Stream-Riparian area: Dry Creek 🥎								
Team (	Team Observers: Mike Widmer, Jeff Jesch, Keith Weaver Date: 01/10/02								
Reach	Reach – Landmarks:								
Start		McCarra	n Crosses Dry (	Creek near the Sou	uth end of the R	eno-Tahoe	Airport.		
Stop		South Vi	ginia Street Cr	osses Dry Creek					
. L.			<u></u>			· · · · · · · · · · · · · · · · · · ·			
Waters (See att		• .	<b>Description</b> — R	Rosgen Morpholog	gical Descriptio	n			
A		В	C 6	D	E	F	G		
Draina <sub>s</sub> Sensiti	Land use   □ wild □ urban □ agricultural x commercial □ open space x flood control x other Drainage / Groundwater Discharge   Sensitivity to disturbance (See attached table²)   x very high □ high □ moderate □ low □ very low								
Yes	No	N/A			Hydrologic				
	х			undated in "relativ	vely frequent" e	vents (1-3 y	years)		
х			Active/stable	grade control					
	x Sinuosity, width/depth ratio, and gradient are in balance with the landscape setting (i.e. landform, geology, and bioclimatic region)								
	х								
	X		Upland water	shed not contribut	ting to riparian	degradation	<u>!</u>		
Yes									

טוגן	1 1/22	Water Quality (1 charton 2021003)
х		Land use does not contribute to water quality degradation
		Erosion does not degrade water quality
	х	Stormwater is not a significant source of water pollution
		Fertilizers, pesticides, and herbicides do not impact water quality
	х	X

Rosgen, Dave. Applied River Morphology. Page 5-5
 Rosgen, Dave. Applied River Morphology. Page 8-9

Yes	No	N/A	Vegetative			
X			Diverse age structure of vegetation			
<u> </u>			Diverse composition of vegetation			
x			Streambank vegetation is comprised of those plants or plant communities that have root masses capable of withstanding high streamflow events			
x			Riparian plants exhibit high vigor			
х			Adequate vegetative cover present to protect banks and dissipate energy during high flows			
	х		Plant communities in the riparian area are an adequate source of coarse and/or large woody debris			
	х		Woody vegetation is not removed for flood control			

Yes	No	N/A	Erosion Deposition
x Floodplain and o			Floodplain and channel characteristics (i.e., rocks, coarse and/or large woody debris) adequate to dissipate energy)
х			Point bars are revegetating
х	х		Lateral stream movement is associated with natural sinuosity
х			System is vertically stable
х			Stream is in balance with the water and sediment being supplied by the watershed (i.e., no excessive erosion or deposition)

Dry Creek is channelized, in this reach, to accommodate anticipated flood flows through commercial and industrial development. The valley bottom is about 60 feet wide. The banks of the channel are sloped at about 2:1. Most of the banks of the channel are armored with rock rip rap, however, geotextile fabric armors the banks of the reach near McCarran Boulevard. A low flow channel is developing sinuosity. Riparian vegetation includes rushes and sedges. Willows and other woody vegetation is removed to improve flood capacity.

The relatively wide floodplain, combined with an active low-flow channel promotes healthy riparian vegetation and the potential for the channel hydrology to be in balance with the landscape setting. The riparian vegetation provides relatively good wildlife habitat for shore birds, hawks and small mammals. It appears that native species out compete invasive weeds. The restored channel floodplain serves as open space available to the public and includes a pedestrian trail system. This promotes a connection between the community and the watershed and is a good practice.

Woody vegetation such as willows, cotton wood and elm trees are removed for flood control. The lack of vegetative cover results in thermal pollution, reduces wildlife habitat, and does not protect the channel banks from erosion.

Functional Rating:  Proper Functioning Condition  x Functional – At Risk  Nonfunctional  Unknown	en e	
Trend for Functional – At Risk x Upward □ Downward □ Not Apparent		
Can factors contributing to unacceptable conditions be  x Yes  ☐ No  ☐ Unknown	controlled by man	agement changes?
If yes, what are the changes?		
☐ Stormwater runoff treatment ☐ Reduce application of fertilizers, herbicides, and p ☐ Encourage riparian buffer zones to replace sod adj ☐ Public education ☐ Reduce impact from livestock and animal wastes ☐ Enforce construction site erosion and sediment cor ☐ Control impacts from vehicles ☐ Control building-site encroachment ☐ Control road encroachment x Other – encourage channel management policies the x Other- control the spread of noxious weeds	acent to streams	getation in the stream channel
Stream Restoration is appropriate?  ☐ Yes ☐ No ☐ Unknown		
If yes, what are the recommendations?		
<ul> <li>☐ Modify watershed runoff and sediment loads</li> <li>☐ Raise channel bottom to reconnect stream to flood</li> <li>☐ Establish grade control structurally</li> <li>☐ Improve existing riparian corridor vegetation</li> <li>☐ Create floodplain (excavate)</li> <li>☐ Shape banks to reduce slope failure hazard</li> <li>☐ Install durable toe protection</li> <li>☐ Implement soil bioengineering</li> <li>☐ Other —</li> </ul>	Iplain	

Name of Riparian-Wetland Area: Dry Creek (4)										
Team Observers: Mike Widmer, Jeff Jesch and Keith Weaver Date: 01/10/02										
Reach - La	andmarks:		<u> </u>							
Start	McCarran Boulevard crosses Boynton Slough (Dry Creek)									
Stop	McCarran Boulevard crosses Dry Creek near the south end of Reno-Tahoe Airport									
	Watershed Physical Description – Rosgen Morphological Description (See attached table 1)  A B C D E F 6 G									
□ WILD □ URBAN □ AGRICULTURAL □ COMMERCIAL □ OPEN SPACE X FLOOD CONTROL X OTHER  Drainage and groundwater discharge  Sensitivity to disturbance (See attached table²)										
x very hig		нісн	□ MODERATE	□LOW	□ ver	RY LOW				

Yes	No	N/A	Hydrologic
	х		Floodplain inundated in "relatively frequent" events (1-3 years)
x	<u> </u>		Active/stable grade control
	х		Sinuosity, width/depth ratio, and gradient are in balance with the landscape setting (i.e. landform, geology, and bioclimatic region)
	х		Riparian zone is widening
	х		Upland watershed not contributing to riparian degradation

Yes	No	N/A	Water Quality (Pollution Sources)
	х		Land use does not contribute to water quality degradation
x			Erosion does not degrade water quality
	х		Stormwater is not a significant source of water pollution
X			Fertilizers, pesticides, and herbicides do not impact water quality

Rosgen, Dave. Applied River Morphology. Page 5-5
 Rosgen, Dave. Applied River Morphology. Page 8-9

Yes	No	N/A	Vegetative
	х		Diverse age structure of vegetation
	х		Diverse composition of vegetation
	х		Streambank vegetation is comprised of those plants or plant communities that have root masses capable of withstanding high streamflow events
	х		Riparian plants exhibit high vigor
	х		Adequate vegetative cover present to protect banks and dissipate energy during high flows
	х		Plant communities in the riparian area are an adequate source of coarse and/or large woody debris
	X		Woody vegetation is not removed for flood control

Yes	No	N/A	Erosion Deposition
	х		Floodplain and channel characteristics (i.e., rocks, coarse and/or large woody debris) adequate to dissipate energy)
	х		Point bars are revegetating
	х		Lateral stream movement is associated with natural sinuosity
x			System is vertically stable
	х		Stream is in balance with the water and sediment being supplied by the watershed (i.e., no excessive erosion or deposition)

Boynton Slough (Dry Creek) does not have characteristics of a natural functioning stream along this reach. There is no defined low flow channel and the banks are very steep. The flow line slope is very low and flows are slow. Tall Whitetop weeds out compete native riparian species. The reach is poor wildlife habitat, due to the lack of riparian vegetation. Vertical banks slough off and contribute sediment to the channel, this increases channel maintenance costs.

There is a high potential for successful stream restoration. Undeveloped land is adjacent to the stream that could allow for excavation and floodplain development. Restorations upstream can serve as examples of suitable restoration methods along this reach. Restoration could incorporate pedestrian trails, open space and wildlife viewing.

## **Summary Functional Rating:** ☐ Proper Functioning Condition ☐ Functional – At Risk x Nonfunctional □ Unknown Trend for Functional - At Risk ☐ Upward ☐ Downward x Not Apparent Can factors contributing to unacceptable conditions be controlled by management changes? ☐ Yes x No □ Unknown If yes, what are the changes? ☐ Stormwater runoff treatment ☐ Reduce application of fertilizers, herbicides, and pesticides ☐ Encourage riparian buffer zones to replace sod adjacent to streams ☐ Public education ☐ Reduce impact from livestock and animal wastes ☐ Enforce construction site erosion and sediment control ☐ Control impacts from vehicles ☐ Control building-site encroachment ☐ Control road encroachment □ Other -Stream Restoration is appropriate? x Yes □ No ☐ Unknown If yes, what are the recommendations? ☐ Modify watershed runoff and sediment loads ☐ Raise channel bottom to reconnect stream to floodplain ☐ Establish grade control structurally x Improve existing riparian corridor vegetation

x Create floodplain (excavate)

☐ Install durable toe protection☐ Implement soil bioengineering

☐ Other –

x Shape banks to reduce slope failure hazard

Name of	f Riparian-	Wetland A	Area: Thon	nas Creek	$\bigcirc$	2.75	₩	e des		
Team O	bservers: 1	Mike Wid	mer, Jeff Jo	esch	V	Dat	e: 01/12/02			
Reach -	Landmark	s:				<del></del>				
Start	Timbe	erline Roa	d crosses	Thomas Cro	eek					
Stop	Stop South Arrowcreek Parkway crosses Thomas Creek									
(See atta	hed Physic ached table B 2&	<sup>1</sup> )	1.*	,	hological Des E		ion F	G		
Land us	se									
x WILD	□ urban	☐ AGRICU	JLTURAL 🗆	COMMERCIA	al Open sp	PACE	☐FLOOD CONTROL	OTHER		
Sensitiv	ity to dist	urbance (	See attache	ed table <sup>2</sup> )						
□ VERY	HIGH	□ нісн	I	□ modera	TE X I	LOW	□ VERY LO	W		

Yes	No	N/A	Hydrologic
х			Floodplain inundated in "relatively frequent" events (1-3 years)
	х		Active/stable grade control
х			Sinuosity, width/depth ratio, and gradient are in balance with the landscape setting (i.e. landform, geology, and bioclimatic region)
	х		Riparian zone is widening
x			Upland watershed not contributing to riparian degradation

Yes	No	N/A	Water Quality (Pollution Sources)
х			Land use does not contribute to water quality degradation
X		-	Erosion does not degrade water quality
X			Stormwater is not a significant source of water pollution
X			Fertilizers, pesticides, and herbicides do not impact water quality

Rosgen, Dave. Applied River Morphology. Page 5-5
 Rosgen, Dave. Applied River Morphology. Page 8-9

Yes	No	N/A	Vegetative
X		·	Diverse age structure of vegetation
X			Diverse composition of vegetation
х			Streambank vegetation is comprised of those plants or plant communities that have root masses capable of withstanding high streamflow events
X			Riparian plants exhibit high vigor
Х			Adequate vegetative cover present to protect banks and dissipate energy during high flows
Х			Plant communities in the riparian area are an adequate source of coarse and/or large woody debris
x			Woody vegetation is not removed for flood control

Yes	No	N/A	Erosion Deposition
x			Floodplain and channel characteristics (i.e., rocks, coarse and/or large woody debris) adequate to dissipate energy)
x	<del></del>		Point bars are revegetating
х			Lateral stream movement is associated with natural sinuosity
x			System is vertically stable
х			Stream is in balance with the water and sediment being supplied by the watershed (i.e., no excessive erosion or deposition)

Thomas Creek flows through the alluvial fan setting in a steep canyon. The creek is vegetated with healthy riparian vegetation such as willows, alder, aspen trees and wetland grasses. The stream is good wildlife habitat, suitable for deer, raccoons, birds, hawks and fish. Water quality is good along the reach. The channel is functioning as a natural, stable stream, capable of carrying flood flows without damage to the environment or structures. The stream is well suited for pedestrian trails and other low impact recreational uses.

Some vertical instability was observed associated with a new stream crossing of a waterline. Erosion is accelerated by Sand bags and straw bales placed in the channel.

Some property owners have stored vehicles and other belongings within the channel floodplain. In addition, landscapes and structures encroach on the floodplain. This should be addressed with public education.

Functional Rating:  Proper Functioning Condition  x Functional — At Risk  Nonfunctional  Unknown	
Trend for Functional – At Risk  Upward  Downward  x Not Apparent	
Can factors contributing to unacceptable conditions be controlled by management changes?  x Yes  No Unknown	
If yes, what are the changes?	
□ Stormwater runoff treatment □ Reduce application of fertilizers, herbicides, and pesticides x Encourage riparian buffer zones to replace sod adjacent to streams x Public education □ Reduce impact from livestock and animal wastes x Enforce construction site erosion and sediment control □ Control impacts from vehicles x Control building-site encroachment □ Control road encroachment □ Other —	
Stream Restoration is appropriate?  □ Yes  x No □ Unknown	
If yes, what are the recommendations?	
<ul> <li>☐ Modify watershed runoff and sediment loads</li> <li>☐ Raise channel bottom to reconnect stream to floodplain</li> <li>☐ Establish grade control structurally</li> <li>☐ Improve existing riparian corridor vegetation</li> <li>☐ Create floodplain (excavate)</li> <li>☐ Shape banks to reduce slope failure hazard</li> <li>☐ Install durable toe protection</li> <li>☐ Implement soil bioengineering</li> <li>☐ Other —</li> </ul>	

Name of	Name of Riparian-Wetland Area: Thomas Creek									
Team Ob	servers: M	like Widme	r, Jeff Jesch, Kei	th Weaver	Date: 01/	16/02				
Reach - I	_andmarks	• •			<u></u>					
Start	Thoma	s Creek ent	ers the south-we	st boundary of	Arrowcreek	Subdivision	1			
Stop	Steam	ooat ditch co	rosses Thomas C	reek						
(See attac	ched table <sup>1</sup> B 2&3	,	on – Rosgen Mo			·	G			
x WILD	□ urban	□ AGRICULT	ural 🗆 commer	cial Dopen s	PACE DFLO	OD CONTROL	OTHER			
Sensitivi	ty to distu	rbance (Se	e attached table <sup>2</sup>	)						
□ VERY H	IIGH	□нісн	□ modei	RATE X	LOW	□ very lo	W			

Yes	No	N/A	Hydrologic
х			Floodplain inundated in "relatively frequent" events (1-3 years)
X			Active/stable grade control
x	· · · · · · · · · · · · · · · · · · ·		Sinuosity, width/depth ratio, and gradient are in balance with the landscape setting (i.e. landform, geology, and bioclimatic region)
X			Riparian zone is widening
X			Upland watershed not contributing to riparian degradation

Yes	No	N/A	Water Quality (Pollution Sources)
X			Land use does not contribute to water quality degradation
X			Erosion does not degrade water quality
X			Stormwater is not a significant source of water pollution
X			Fertilizers, pesticides, and herbicides do not impact water quality

Rosgen, Dave. Applied River Morphology. Page 5-5
 Rosgen, Dave. Applied River Morphology. Page 8-9

Yes	No	N/A	Vegetative
х			Diverse age structure of vegetation
X			Diverse composition of vegetation
X			Streambank vegetation is comprised of those plants or plant communities that have root masses capable of withstanding high streamflow events
X			Riparian plants exhibit high vigor
х			Adequate vegetative cover present to protect banks and dissipate energy during high flows
х			Plant communities in the riparian area are an adequate source of coarse and/or large woody debris
х			Woody vegetation is not removed for flood control

Yes	No	N/A	Erosion Deposition
х			Floodplain and channel characteristics (i.e., rocks, coarse and/or large woody debris) adequate to dissipate energy)
х			Point bars are revegetating
х			Lateral stream movement is associated with natural sinuosity
Х			System is vertically stable
X			Stream is in balance with the water and sediment being supplied by the watershed (i.e., no excessive erosion or deposition)

Thomas Creek flows through low-density urban development. The relatively undisturbed channel is situated in a canyon with undisturbed banks and a functioning floodplain. Much of the reach is paralleled by a unimproved walking trail that receives light traffic. The reach is capable of conveying flood flows without risk of property damage or erosion. Healthy riparian vegetation serves as good wildlife habitat. The natural functioning channel does not require maintenance. Water quality is good and the reach is not a source of sediment or pollution.

The Southwest Vista subdivision conveys storm flows to a large detention basin located at Ventana Prkwy crossing over Thomas Creek. Flows are metered through two 24" (?) culverts that discharge directly to Thomas Creek. The culvert inlets are very low in the basin, therefore, the detention basin has no sediment storage capability and sediment is carried to the creek. The low elevation of the culvert inlet also increases the risk of the basin becoming clogged with sediment and potentially impairing it's functionality. Raising the culvert inlets may allow for sediment storage and limit the risk of the culverts becoming blocked. The storm drain culverts discharge to the west bank of Thomas Creek about five feet above the channel invert. This has resulted in bank erosion.

Venata Prkwy crosses Thomas Creek in a box culvert located east of Southwest Vista. The natural functioning and natural appearing stream was replaced by approximately 250 lineal feet of channel armored with white rock riprap. No characteristics of the existing channel were preserved. There are very few signs of riparian vegetation emerging, therefore, benefits to wildlife are not available. There is no defined low flow channel. The stream spreads out across

a 70 foot wide flat channel bottom. This configuration can have serious impacts on aquatic life, including trout populations that can no longer pass through this obstructed section. This type of stream treatment is unfortunate, especially in an area so highly visible to the public. This small reach is non-functioning. Possible restoration could include defining a low flow channel through the rock rip rap, reintroducing riparian vegetation and developing natural appearing drops and pool structures.

**Summary Functional Rating:** x Proper Functioning Condition ☐ Functional – At Risk ☐ Nonfunctional □ Unknown Trend for Functional - At Risk ☐ Upward ☐ Downward x Not Apparent Can factors contributing to unacceptable conditions be controlled by management changes? ☐ Yes ☐ Unknown If yes, what are the changes? ☐ Stormwater runoff treatment ☐ Reduce application of fertilizers, herbicides, and pesticides ☐ Encourage riparian buffer zones to replace sod adjacent to streams ☐ Public education ☐ Reduce impact from livestock and animal wastes ☐ Enforce construction site erosion and sediment control ☐ Control impacts from vehicles ☐ Control building-site encroachment ☐ Control road encroachment ☐ Other – Stream Restoration is appropriate? X Yes, box culvert ☐ Unknown If yes, what are the recommendations? ☐ Modify watershed runoff and sediment loads ☐ Raise channel bottom to reconnect stream to floodplain ☐ Establish grade control structurally x Improve existing riparian corridor vegetation ☐ Create floodplain (excavate) ☐ Shape banks to reduce slope failure hazard ☐ Install durable toe protection ☐ Implement soil bioengineering

x Other - develop a functional low flow channel

Name of I	Riparian-V	Wetland Area: T	nomas Creek	Š		
Team Obs	servers: N	Mike Widmer, Jef	f Jesch	Da	te: 01/15/02	
Reach - L	andmarks	s:				
Start	Steam	boat Ditch crosse	s Thomas Creek			
Stop	Last C	Chance Ditch cros	ses Thomas Cree	ek	· · · · · · · · · · · · · · · · · · ·	
(See attac		:#	•	logical Descript  E	ion F	G
Land use	<b>:</b>	:				
x WILD	x URBAN	☐ AGRICULTURAL	. COMMERCIAL	□OPEN SPACE	□FLOOD CONTROL	OTHER
Sensitivit	ty to distu	u <b>rbance</b> (See atta	ched table <sup>2</sup> )			
□ VERY H	IGH	□нісн	x moderate	□ row	□ very lo	W

Yes	No	N/A	Hydrologic
x			Floodplain inundated in "relatively frequent" events (1-3 years)
		Х	Active/stable grade control
х			Sinuosity, width/depth ratio, and gradient are in balance with the landscape setting (i.e. landform, geology, and bioclimatic region)
	х		Riparian zone is widening
x			Upland watershed not contributing to riparian degradation

Yes	No	N/A	Water Quality (Pollution Sources)
Х			Land use does not contribute to water quality degradation
X			Erosion does not degrade water quality
X			Stormwater is not a significant source of water pollution
X			Fertilizers, pesticides, and herbicides do not impact water quality

Rosgen, Dave. Applied River Morphology. Page 5-5
 Rosgen, Dave. Applied River Morphology. Page 8-9

Yes	No	N/A	Vegetative
X			Diverse age structure of vegetation
x			Diverse composition of vegetation
х			Streambank vegetation is comprised of those plants or plant communities that have root masses capable of withstanding high streamflow events
х			Riparian plants exhibit high vigor
X			Adequate vegetative cover present to protect banks and dissipate energy during high flows
X			Plant communities in the riparian area are an adequate source of coarse and/or large woody debris
x	† · · · · ·		Woody vegetation is not removed for flood control

Yes	No	N/A	Erosion Deposition
x			Floodplain and channel characteristics (i.e., rocks, coarse and/or large woody debris) adequate to dissipate energy)
х			Point bars are revegetating
x			Lateral stream movement is associated with natural sinuosity
х			System is vertically stable
Х			Stream is in balance with the water and sediment being supplied by the watershed (i.e., no excessive erosion or deposition)

This section of Thomas Creek is relatively undisturbed and exists as a natural functioning and natural appearing stream. The creek resists erosion and there is little risk of damage to structures during flood events. Along this reach, riparian vegetation is healthy, wildlife habitat is good and Water quality is not impacted.

Functional l	Rating:	
	x Proper Functioning Condition	
	☐ Functional – At Risk	
	□ Nonfunctional	
	□ Unknown	
Trend for F	Functional – At Risk	
	☐ Upward	
	□ Downward	
	x Not Apparent	
Can factors	s contributing to unacceptable conditions be controlled by management cl	hanges?
	☐ Yes	
	□ No	
	□ Unknown	
If yes, what	at are the changes?	
□ Stormw	vater runoff treatment	
	e application of fertilizers, herbicides, and pesticides	
	rage riparian buffer zones to replace sod adjacent to streams	
☐ Public e		
	e impact from livestock and animal wastes	
	e construction site erosion and sediment control	
	l impacts from vehicles	
	l building-site encroachment	
	l road encroachment	
Other -		
Stream Res	storation is appropriate?	
	☐ Yes	
	□ No	
	□ Unknown	
If yes, wha	at are the recommendations?	
	y watershed runoff and sediment loads	
	channel bottom to reconnect stream to floodplain	
	ish grade control structurally	
	ve existing riparian corridor vegetation	
	floodplain (excavate)	
	banks to reduce slope failure hazard	
	durable toe protection	
-	ment soil bioengineering	
☐ Other -	<u>-</u>	

Name of Ri	parian-We	etland Area: Th	nomas Creek	).	*	a de la companya de La companya de la co		
Team Obser	rvers: Mil	ke Widmer, Jef	f Jesch	Da	te: 01/15/02			
Reach - La	ndmarks:							
Start	Last Cha	ance Ditch cros	ses Thomas Cree	k				
Stop	Highwa	y 395 crosses T	homas Creek		·	<u></u>		
Watershed (See attache A		<b>Description</b> –	Rosgen Morphol D	ogical Descript	ion F	G 3&4		
□ WILD x	URBAN X	AGRICULTURAL	☐ COMMERCIAL	□OPEN SPACE	□FLOOD CONTRO	ol 🗆 other		
Sensitivity to disturbance (See attached table <sup>2</sup> )  x very high								

Yes	No	N/A	Hydrologic
x			Floodplain inundated in "relatively frequent" events (1-3 years)
	х		Active/stable grade control
X			Sinuosity, width/depth ratio, and gradient are in balance with the landscape setting (i.e. landform, geology, and bioclimatic region)
		х	Riparian zone is widening
X			Upland watershed not contributing to riparian degradation

Yes	No	N/A	Water Quality (Pollution Sources)		
	х		Land use does not contribute to water quality degradation		
x			Erosion does not degrade water quality		
X			Stormwater is not a significant source of water pollution		
X			Fertilizers, pesticides, and herbicides do not impact water quality		

Rosgen, Dave. Applied River Morphology. Page 5-5
 Rosgen, Dave. Applied River Morphology. Page 8-9

Yes	No	N/A	Vegetative
	х		Diverse age structure of vegetation
٠.	х		Diverse composition of vegetation
	х		Streambank vegetation is comprised of those plants or plant communities that have root masses capable of withstanding high streamflow events
	х		Riparian plants exhibit high vigor
·	х		Adequate vegetative cover present to protect banks and dissipate energy during high flows
	х		Plant communities in the riparian area are an adequate source of coarse and/or large woody debris
	x		Woody vegetation is not removed for flood control

Yes	No	N/A	Erosion Deposition
	х		Floodplain and channel characteristics (i.e., rocks, coarse and/or large woody debris) adequate to dissipate energy)
	х		Point bars are revegetating
	х		Lateral stream movement is associated with natural sinuosity
	х		System is vertically stable
	х		Stream is in balance with the water and sediment being supplied by the watershed (i.e., no excessive erosion or deposition)

Thomas Creek flows through large residential lots that range from two and a half to ten acres in size. Historically the land was irrigated pasture that produced hay and livestock. Recently, residential lots, with expansive areas of manicured turf, are replacing pastures. These residences still rely on surface irrigation water. New development has treated the stream channel fairly well. The lots typically do not encroach on the stream and in some cases, fencing protects the stream buffer zone.

Existing ranch operations impact the creek. The creek is channelized and realigned to optimize pasture irrigation. The realignment causes bank erosion that contributes sediment to the system. The modified alignment requires annual maintenance such as dredging. Animal waste is stockpiled along the creek, adding nutrients to the stream, and degrading water quality.

The reach has a good potential for recovery. This may be accomplished by implementing low cost management changes such as; enforcing the buffer zone specified in the stream ordinance, limit dredging and channeling, and removal of animal waste and other debris stockpiled along the creek.

Functional Rating:  Proper Functioning Condition  x Functional — At Risk  Nonfunctional  Unknown		
Trend for Functional – At Risk x Upward □ Downward □ Not Apparent		
Can factors contributing to unacceptable conditions be controll x Yes □ No □ Unknown	led by management change	s?
If yes, what are the changes?		
□ Stormwater runoff treatment □ Reduce application of fertilizers, herbicides, and pesticides x Encourage riparian buffer zones to replace sod adjacent to s x Public education x Reduce impact from livestock and animal wastes x Enforce construction site erosion and sediment control □ Control impacts from vehicles x Control building-site encroachment x Control road encroachment □ Other —		
Stream Restoration is appropriate?  x Yes  No Unknown		
If yes, what are the recommendations?		
<ul> <li>☐ Modify watershed runoff and sediment loads</li> <li>☐ Raise channel bottom to reconnect stream to floodplain</li> <li>☐ Establish grade control structurally</li> <li>x Improve existing riparian corridor vegetation</li> <li>☐ Create floodplain (excavate)</li> <li>☐ Shape banks to reduce slope failure hazard</li> <li>☐ Install durable toe protection</li> <li>x Implement soil bioengineering</li> <li>☐ Other —</li> </ul>		

Name of R	iparian-	Wetland	Area: Tho	mas Creek Sou	ith Fork (6)		· · · · ·
Team Obse	ervers:	Mike Wi	idmer, Jeff	Jesch	Da	te: 01/14/02	
Reach - La	ndmark	s:					
Start	High	way 395	crosses the	South Fork of	Thomas Creek		
Stop	Lake	Alexand	er				
Highway 3 (See attach	95	<sup>1</sup> )	ription – Ro	osgen Morpho	logical Descript  E	F 6	of G
Land use							_
□ wild □	URBAN	☐ AGRIC	CULTURAL X	COMMERCIAL	□OPEN SPACE	X FLOOD CONTROL	OTHER
Sensitivity	to dist	urbance	(See attach	ed table <sup>2</sup> )			
x VERY HIG	Н	□ніс	Н	$\square$ moderate	Low	☐ VERY LO	W

Yes	No	N/A	Hydrologic
	х		Floodplain inundated in "relatively frequent" events (1-3 years)
	х		Active/stable grade control
	х		Sinuosity, width/depth ratio, and gradient are in balance with the landscape setting (i.e. landform, geology, and bioclimatic region)
	х		Riparian zone is widening
	х		Upland watershed not contributing to riparian degradation

Yes	No	N/A	Water Quality (Pollution Sources)
	х		Land use does not contribute to water quality degradation
	х		Erosion does not degrade water quality
	х		Stormwater is not a significant source of water pollution
		х	Fertilizers, pesticides, and herbicides do not impact water quality

Rosgen, Dave. Applied River Morphology. Page 5-5
 Rosgen, Dave. Applied River Morphology. Page 8-9

Yes	No	N/A	Vegetative
	х		Diverse age structure of vegetation
	x		Diverse composition of vegetation
		X	Streambank vegetation is comprised of those plants or plant communities that have root masses capable of withstanding high streamflow events
	х		Riparian plants exhibit high vigor
		х	Adequate vegetative cover present to protect banks and dissipate energy during high flows
	х		Plant communities in the riparian area are an adequate source of coarse and/or large woody debris
		x	Woody vegetation is not removed for flood control

Yes	No	N/A	Erosion Deposition
	х		Floodplain and channel characteristics (i.e., rocks, coarse and/or large woody debris) adequate to dissipate energy)
		х	Point bars are revegetating
	х		Lateral stream movement is associated with natural sinuosity
	X		System is vertically stable
	х		Stream is in balance with the water and sediment being supplied by the watershed (i.e., no excessive erosion or deposition)

Roughly three stream treatment types characterize Thomas creek, east of Highway 395. They include relatively narrow channels with steep banks, broad channels with 3:1 banks and streams that serve as amenities to landscapes. The narrow channels are the most problematic. The landscaped channels and the broad flood control channels are stable, provide wildlife habitat and, in many cases the channel geometry and vegetation are rejuvenating.

Thomas Creek emerges from under Highway 395 in two locations. The South fork box culvert is located near the Marriott Hotel. A sheet-pile grade control structure exists about 30 feet downstream of the culvert. A constructed wetland is just to the north. The confined channel extends about 1000 feet east of the Highway and is the most impacted reach of Thomas creek east of Highway 395. The channel has very steep banks and no active floodplain. Significant erosion is occurring near the grade control structure and along the banks. Tall white top is the only plant species observed. This is problematic as it serves as a seed source downstream. Development encroaches on the banks of the channel limiting restoration opportunities. The stream corridor is poor wildlife habitat. Erosion and sediment problems will result in continuing maintenance costs. The stream has no aesthetic benefits to the public. The channel cross section appears small relative to downstream channels designed to carry the 100-year flood event.

While the upstream portion of the reach has limited potential, the lower section exhibits many positive characteristics. The improved channel geometry will reduce the risk of channel and bank

erosion. The new channel is revegetating nicely and offers improved wildlife habitat. Tall Whitetop weeds are out competed by more desirable species.

The North Fork of Thomas Creek is mostly used for landscape features such as ponds, waterfalls and natural appearing streams. The channel is capable of resisting erosion, as well as conveying anticipated flood flows. Landscape and native plant species provide wildlife habitat and stabilize the channel banks. Pedestrian trails invite the public to interact with the watershed, which promotes stewardship.

The North Fork and South fork of Thomas Creek converge in a created lake. The combined flows leave the lake and flow to Lake Alexandria in a very broad flood channel. Thomas Creek continues beyond Lake Alexandria in a narrow, incised channel to Steamboat Creek.

Challenges to improving the riparian corridor will involve approving woody riparian vegetation within the flood control channel and controlling Tall Whitetop weeds. Developers have shown an eagerness to include streams as amenities to landscapes. This is a good practice and should be encouraged.

Functional Rating:  Proper Functioning Condition  Functional – At Risk  Nonfunctional  Unknown	
Trend for Functional – At Risk  Upward  x Downward  Not Apparent	
Can factors contributing to unacceptable conditions be controlled by management changes?  X Yes  No  Unknown	
If yes, what are the changes?	
<ul> <li>□ Stormwater runoff treatment</li> <li>□ Reduce application of fertilizers, herbicides, and pesticides</li> <li>x Encourage riparian buffer zones to replace sod adjacent to streams</li> <li>□ Public education</li> <li>□ Reduce impact from livestock and animal wastes</li> <li>□ Enforce construction site erosion and sediment control</li> <li>□ Control impacts from vehicles</li> <li>x Control building-site encroachment</li> <li>□ Control road encroachment</li> <li>□ Other —</li> </ul>	
Stream Restoration is appropriate?  ☐ Yes ☐ No x Unknown	
If yes, what are the recommendations?	
<ul> <li>☐ Modify watershed runoff and sediment loads</li> <li>☐ Raise channel bottom to reconnect stream to floodplain</li> <li>☐ Establish grade control structurally</li> <li>x Improve existing riparian corridor vegetation</li> <li>x Create floodplain (excavate)</li> <li>x Shape banks to reduce slope failure hazard</li> <li>☐ Install durable toe protection</li> <li>x Implement soil bioengineering</li> <li>☐ Other —</li> </ul>	

Name of R	Name of Riparian-Wetland Area: Whites Creek \									
Team Observers: Mike Widmer, Jeff Jesch, Keith Weaver Date: 01/16/02										
Reach - La	Reach - Landmarks:									
Start	Dirt road to Government lots crosses Whites Creek									
Stop	Splitt	er box diversion o	on Whites Creek							
(See attach A Land use	Watershed Physical Description – Rosgen Morphological Description (See attached table 1)  A B 2a C D E F G  Land use									
X WILD X URBAN AGRICULTURAL COMMERCIAL OPEN SPACE OFLOOD CONTROL OTHER										
Sensitivity to disturbance (See attached table <sup>2</sup> )										
□ VERY HIC	□ VERY HIGH □ HIGH □ MODERATE □ LOW X VERY LOW									

Yes	No	N/A	Hydrologic
	х		Floodplain inundated in "relatively frequent" events (1-3 years)
x			Active/stable grade control
х			Sinuosity, width/depth ratio, and gradient are in balance with the landscape setting (i.e. landform, geology, and bioclimatic region)
	х		Riparian zone is widening
	х		Upland watershed not contributing to riparian degradation

Yes	No	N/A	Water Quality (Pollution Sources)
	х		Land use does not contribute to water quality degradation
	х		Erosion does not degrade water quality
	х		Stormwater is not a significant source of water pollution
X			Fertilizers, pesticides, and herbicides do not impact water quality

Rosgen, Dave. Applied River Morphology. Page 5-5
 Rosgen, Dave. Applied River Morphology. Page 8-9

Yes	No	N/A	Vegetative
х			Diverse age structure of vegetation
x			Diverse composition of vegetation
х			Streambank vegetation is comprised of those plants or plant communities that have root masses capable of withstanding high streamflow events
X			Riparian plants exhibit high vigor
х			Adequate vegetative cover present to protect banks and dissipate energy during high flows
х			Plant communities in the riparian area are an adequate source of coarse and/or large woody debris
x			Woody vegetation is not removed for flood control

Yes	No	N/A	Erosion Deposition
x			Floodplain and channel characteristics (i.e., rocks, coarse and/or large woody debris) adequate to dissipate energy)
		х	Point bars are revegetating
X			Lateral stream movement is associated with natural sinuosity
	х		System is vertically stable
<del></del>	х		Stream is in balance with the water and sediment being supplied by the watershed (i.e., no excessive erosion or deposition)

In this reach, Whites Creek exists in a natural and relatively undisturbed condition. The riparian vegetation is healthy and provides good wildlife habitat. The channel is stable and capable of carrying flood flows without damage to property or the environment.

The primary land use is low-density residential development. Development is beginning to occur atop the steep slopes overlooking the creek. Monitoring construction will ensure storm water runoff and fill pushed into the canyon does not affect the creek.

Storm water runoff from the Mount Rose Highway, and development, has resulted in erosion and sediment transported to Whites Creek. Storm water flows to Whites creek in an unprotected, natural drainage. Armoring the gully, created by the storm flows, may prevent further erosion. It appears that over 100 yards of soil and roadbed material was transported to Whites Creek. NDOT and Washoe County should investigate this.

New construction was observed east of the Whites Creek split. The building pad is located in the crotch of the two channels. The site appears to be at risk from flood damage. This assumption is based on observations of a large fan of rock and gravel debris that appears to have avulsed from the stream channel just above the site. Further, the site does not comply with the Washoe County Stream Ordinance that requires a 35' buffer zone. Washoe County should investigate this.

Functional	Rating:  Proper Functioning Cond  Functional – At Risk  Nonfunctional  Unknown	lition		e egy.
Trend for F	unctional – At Risk  ☐ Upward  x Downward  ☐ Not Apparent			
Can factors	contributing to unacceptable x Yes □ No □ Unknown	conditions be controlled	d by managemen	it changes?
If yes, wha	are the changes?			
☐ Reduce x Encoura x Public e ☐ Reduce x Enforce ☐ Control x Control	impact from livestock and an construction site erosion and impacts from vehicles building-site encroachment road encroachment	cent to streams		
Stream Res	storation is appropriate?  Yes  No Unknown			
If yes, wha	t are the recommendations?			
☐ Raise c ☐ Establi ☐ Improv ☐ Create ☐ Shape 1 ☐ Install	watershed runoff and sedime hannel bottom to reconnect state grade control structurally e existing riparian corridor version floodplain (excavate) banks to reduce slope failure ledurable toe protection nent soil bioengineering	ream to floodplain		

Name of Riparian-Wetland Area: South Fork of Whites Creek

Team Observers: Mike Widmer, Jeff Jesch, Keith Weaver Date: 01/16/02

Reach — Landmarks:

Start Whites Creek diversion splitter

Stop Steamboat Ditch crosses South Fork of Whites Creek

Watershed Physical Description — Rosgen Morphological Description
(See attached table¹)

A 28:3 B \_ C \_ D \_ E \_ F \_ G \_\_\_

Land use

x wild x urban Gagricultural Gommercial Gopen space Gelood control Gother

Yes	No	N/A	Hydrologic
	х		Floodplain inundated in "relatively frequent" events (1-3 years)
x			Active/stable grade control
	х	·	Sinuosity, width/depth ratio, and gradient are in balance with the landscape setting (i.e. landform, geology, and bioclimatic region)
	х		Riparian zone is widening
. X			Upland watershed not contributing to riparian degradation

☐ MODERATE

x LOW

☐ VERY LOW

Yes	No	N/A	Water Quality (Pollution Sources)
X			Land use does not contribute to water quality degradation
x			Erosion does not degrade water quality
	x		Stormwater is not a significant source of water pollution
			Fertilizers, pesticides, and herbicides do not impact water quality

Sensitivity to disturbance (See attached table<sup>2</sup>)

☐ VERY HIGH

Пнісн

<sup>&</sup>lt;sup>1</sup> Rosgen, Dave. Applied River Morphology. Page 5-5

<sup>&</sup>lt;sup>2</sup> Rosgen, Dave. Applied River Morphology. Page 8-9

Yes	No	N/A	Vegetative
X			Diverse age structure of vegetation
X			Diverse composition of vegetation
х			Streambank vegetation is comprised of those plants or plant communities that have root masses capable of withstanding high streamflow events
X			Riparian plants exhibit high vigor
X			Adequate vegetative cover present to protect banks and dissipate energy during high flows
х			Plant communities in the riparian area are an adequate source of coarse and/or large woody debris
X			Woody vegetation is not removed for flood control

Yes	No	N/A	Erosion Deposition
х			Floodplain and channel characteristics (i.e., rocks, coarse and/or large
			woody debris) adequate to dissipate energy)
x Point bars are revegetating			Point bars are revegetating
	х		Lateral stream movement is associated with natural sinuosity
	х		System is vertically stable
			Stream is in balance with the water and sediment being supplied by the
			watershed (i.e., no excessive erosion or deposition)

Whites creek flows split about equally between the North Fork and the South Fork at the concrete splitter, located just upstream from the government-housing tract. Undisturbed areas as well as sections affected by property owners characterize this reach.

The undisturbed creek is stable and conveys flood flows without risk of property or environmental damage. Vegetation is healthy and provides good wildlife habitat.

The stream is impacted in areas of higher urban density. Land owners have modified the creek to create water features in landscapes, channelized the stream to better convey flood flows and removed riparian vegetation.

Stream characteristics are relatively stable along the reach and would respond rapidly to limited restoration efforts. Riparian areas, impacted by property owners, could be improved by removing stream channel modifications and reestablishing riparian vegetation. This could reduce maintenance costs, limit flooding risks and improve wildlife habitat.

The upstream watershed is contributing significant sediment loads to the creek. This should be controlled by enforcing construction site Best Management Practices and properly conveying storm water runoff from local roads and the Mount Rose Highway.

F	unctional Rating:		
	☐ Proper Functioning Condition		verteri State of the state of
	x Functional – At Risk		
	☐ Nonfunctional		
	☐ Unknown		
Т	rend for Functional – At Risk		
	☐ Upward		
	☐ Downward		
	x Not Apparent		
	A. Hot Eppmont		
C	an factors contributing to unacceptable conditions	s be controlled by manager	nent changes?
	- V	g oo commoned by manager	
	X Yes		
	□ Unknown		
	Li Chkilowh		
T	Corner and the shames of		
1.	yes, what are the changes?		
_	7. G/		
	Stormwater runoff treatment	14:-::4	
	Reduce application of fertilizers, herbicides, an		
	Encourage riparian buffer zones to replace sod a	adjacent to streams	
	Public education		
	Reduce impact from livestock and animal waste		
	1 Enforce construction site erosion and sediment	control	
	Control impacts from vehicles		
Х	Control building-site encroachment		
	Control road encroachment		
	Other —		
_			
		•	
c	tream Restoration is appropriate?		
	x Yes		
	□ No		
	☐ Unknown		
	LI Unknown		
	6 1 4 4		
I	f yes, what are the recommendations?		
ַ	Modify watershed runoff and sediment loads		
[	☐ Raise channel bottom to reconnect stream to flo	oodplain	
	☐ Establish grade control structurally		
7	Improve existing riparian corridor vegetation		
[	Create floodplain (excavate)		
>	61 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		
_	Install durable toe protection		
r	☐ Implement soil bioengineering		
	Other –		
L	1 Out		

Name of Riparian-Wetland Area: South fork of Whites Creek 2 Date: 01/23/02 Team Observers: Jeff Jesch Reach - Landmarks: Steamboat Ditch Crosses The south fork of Whites Creek Start South Virginia Street Crosses the south fork of Whites Creek Stop Watershed Physical Description - Rosgen Morphological Description (See attached table<sup>1</sup>) D \_\_\_\_ Land use  $\square$  wild x urban  $\square$  agricultural  $\square$  commercial  $\square$  open space x flood control  $\square$  other Sensitivity to disturbance (See attached table<sup>2</sup>) ☐ VERY LOW Low Пнісн MODERATE □ VERY HIGH

Yes	No	N/A	Hydrologic
	Х		Floodplain inundated in "relatively frequent" events (1-3 years)
X			Active/stable grade control
	X		Sinuosity, width/depth ratio, and gradient are in balance with the landscape setting (i.e. landform, geology, and bioclimatic region)
	X		Riparian zone is widening
	X		Upland watershed not contributing to riparian degradation

Yes	No	N/A	Water Quality (Pollution Sources)
X			Land use does not contribute to water quality degradation
	X		Erosion does not degrade water quality
	X		Stormwater is not a significant source of water pollution
X			Fertilizers, pesticides, and herbicides do not impact water quality

<sup>&</sup>lt;sup>1</sup> Rosgen, Dave. Applied River Morphology. Page 5-5

<sup>&</sup>lt;sup>2</sup> Rosgen, Dave. Applied River Morphology. Page 8-9

Yes	No	N/A	Vegetative
	X		Diverse age structure of vegetation
	X		Diverse composition of vegetation
	X		Streambank vegetation is comprised of those plants or plant communities that have root masses capable of withstanding high streamflow events
	X		Riparian plants exhibit high vigor
	X		Adequate vegetative cover present to protect banks and dissipate energy during high flows
	X		Plant communities in the riparian area are an adequate source of coarse and/or large woody debris
	X		Woody vegetation is not removed for flood control

Yes	No	N/A	Erosion Deposition
X			Floodplain and channel characteristics (i.e., rocks, coarse and/or large woody debris) adequate to dissipate energy)
	X		Point bars are revegetating
X			Lateral stream movement is associated with natural sinuosity
	X		System is vertically stable
	X		Stream is in balance with the water and sediment being supplied by the watershed (i.e., no excessive erosion or deposition)

The South Fork of Whites Creek has been channelized and moved to the edge of subdivision property lines. The channel does not retain any characteristics of a natural functioning or natural appearing stream and more closely resembles a ditch. Channel erosion contributes sediment to the watershed and riparian processes do not improve water quality. The stream is poor wildlife habitat and is of little aesthetic value to the community.

Restoration of the creek would be challenging in high-density urban settings. Encroachment by roads and development limit opportunities to create a functioning riparian corridor. Downstream from existing developments, restoration sites include a park setting just west of the 395 Freeway. The publicly owned park has sufficient property to develop a natural appearing and functioning stream that would benefit the entire region. A second site across the freeway would be suitable for restoration. The property owner abandoned the existing Whites Creek channel and riparian vegetation was removed in preparation for development. The steam was rerouted in a ditch along the property line. As mitigation, the developer has been directed to restore the existing ditch to function as a natural stream. The drainage currently has some problems; it is severely eroding, contributing sediment to the watershed. The banks of the ditch failed in the upper reach, and flows spread across the property causing erosion and property damage. The community has expressed their displeasure with the stream treatment in Citizen Advisory Board meetings.

Restorations that restore a floodplain, reestablish riparian vegetation, and incorporate appropriate channel geometry have good potential for success.

Functional Rating:
☐ Proper Functioning Condition
x Functional – At Risk
☐ Nonfunctional
□ Unknown
Trend for Functional – At Risk
☐ Upward
x Downward
□ Not Apparent
in Not Apparent
Can factors contributing to unacceptable conditions be controlled by management changes?
x Yes
No No
□ Unknown
If yes, what are the changes?
☐ Stormwater runoff treatment
☐ Reduce application of fertilizers, herbicides, and pesticides
x Encourage riparian buffer zones to replace sod adjacent to streams
☐ Public education
☐ Reduce impact from livestock and animal wastes
☐ Enforce construction site erosion and sediment control
☐ Control impacts from vehicles
x Control building-site encroachment
☐ Control road encroachment
□ Other –
Stream Restoration is appropriate?
x Yes
□ No
☐ Unknown
TC
If yes, what are the recommendations?
The North Community of the American Ame
☐ Modify watershed runoff and sediment loads
Raise channel bottom to reconnect stream to floodplain
☐ Establish grade control structurally
x Improve existing riparian corridor vegetation
x Create floodplain (excavate)
x Shape banks to reduce slope failure hazard
☐ Install durable toe protection
x Implement soil bioengineering
□ Other –

Name of Riparian-Wetland Area: South Fork of Whites Creek 3 Date: 01/16/02 Team Observers: Mike Widmer, Jeff Jesch, Keith Weaver Reach - Landmarks: 395 Freeway crosses the South Fork of Whites Creek Start Whites Creek converges with Thomas Creek Stop Watershed Physical Description - Rosgen Morphological Description (See attached table<sup>1</sup>) G 5c E F В C 5c D A

·		<del></del>			<del></del>	
Land us	e ·			•		
x WILD	☐ URBAN	AGRICULTURAL	x COMMERCIAL	X OPEN SPACE	x FLOOD CONTROL	OTHER
Sensitiv	ity to dist	urbance (See atta	ched table <sup>2</sup> )			
x VERY H	IIGH	□нісн	□ moderate	LOW	□ very low	

Yes	No	N/A	Hydrologic
x			Floodplain inundated in "relatively frequent" events (1-3 years)
х			Active/stable grade control
X			Sinuosity, width/depth ratio, and gradient are in balance with the landscape setting (i.e. landform, geology, and bioclimatic region)
X			Riparian zone is widening
	х		Upland watershed not contributing to riparian degradation

Yes	No	N/A	Water Quality (Pollution Sources)
X			Land use does not contribute to water quality degradation
x			Erosion does not degrade water quality
x			Stormwater is not a significant source of water pollution
<u>x</u>			Fertilizers, pesticides, and herbicides do not impact water quality

<sup>&</sup>lt;sup>1</sup> Rosgen, Dave. Applied River Morphology. Page 5-5

<sup>&</sup>lt;sup>2</sup> Rosgen, Dave. Applied River Morphology. Page 8-9

Yes	No	N/A	Vegetative
	х	·	Diverse age structure of vegetation
	х	*	Diverse composition of vegetation
	х		Streambank vegetation is comprised of those plants or plant communities that have root masses capable of withstanding high streamflow events
х			Riparian plants exhibit high vigor
	х		Adequate vegetative cover present to protect banks and dissipate energy during high flows
	х		Plant communities in the riparian area are an adequate source of coarse and/or large woody debris
	х		Woody vegetation is not removed for flood control

Yes	No	N/A	Erosion Deposition
	X		Floodplain and channel characteristics (i.e., rocks, coarse and/or large woody debris) adequate to dissipate energy)
X			Point bars are revegetating
	х		Lateral stream movement is associated with natural sinuosity
	х		System is vertically stable
		X	Stream is in balance with the water and sediment being supplied by the watershed (i.e., no excessive erosion or deposition)

Two stream types characterize the South Fork of Whites Creek in the Double Diamond Subdivision. They include newly constructed flood control channels designed to carry the one hundred year event and existing incised channels. The flood control channels are approximately five feet deep and about one hundred feet wide. Defined low flow channels are incorporated into the design and disturbed areas were reseeded with appropriate seed mix. Unimproved channels are incised up to nine feet, with vertical banks.

The flood control channel is rejuvenating following its construction. Vegetation is emerging and the riparian area is already good habitat for wildlife, including small mammals, shore birds and hawks. The channel geometry is suitable for the landscape setting and wide enough to convey anticipated flood flows without damage to property or the environment.

The existing channel will be modified to carry anticipated flood flows as new development expands. The incised stream is considered functionally at risk, since riparian vegetation is not fully established and the steep banks are subject to erosion during high stream flow events. Steep banks and emerging vegetation provides relatively good cover for wildlife.

Maintenance will be the main challenge in the flood control channels. Tall Whitetop weeds threaten to out-compete native species. Methods such as mowing, herbicide applications, grazing and pulling are potential weed management tools. Local agencies should partner with developers to test new weed control methods. Jurisdictions should allow some woody riparian vegetation to establish within the flood control channels. This would benefit wildlife and enhance channel characteristics that improve water quality. Upland watershed practices that

contribute sediment to the stream should be controlled. This may include watershed restoration, enforcing construction site sediment control, and controlling storm water runoff from roads and parking lots. **Summary Functional Rating:** ☐ Proper Functioning Condition x Functional – At Risk ☐ Nonfunctional ☐ Unknown Trend for Functional – At Risk x Upward ☐ Downward ☐ Not Apparent Can factors contributing to unacceptable conditions be controlled by management changes? x Yes □ No □ Unknown If ves, what are the changes? ☐ Stormwater runoff treatment Reduce application of fertilizers, herbicides, and pesticides ☐ Encourage riparian buffer zones to replace sod adjacent to streams ☐ Public education ☐ Reduce impact from livestock and animal wastes x Enforce construction site erosion and sediment control ☐ Control impacts from vehicles ☐ Control building-site encroachment ☐ Control road encroachment x Other - Partner with developers to manage the spread of Tall Whitetop weeds x Other - jurisdictions should allow woody riparian vegetation to grow along low flow channels Stream Restoration is appropriate? x Yes ☐ Unknown If yes, what are the recommendations? ☐ Modify watershed runoff and sediment loads ☐ Raise channel bottom to reconnect stream to floodplain ☐ Establish grade control structurally x Improve existing riparian corridor vegetation ☐ Create floodplain (excavate)

☐ Shape banks to reduce slope failure hazard

☐ Install durable toe protection☐ Implement soil bioengineering

☐ Other –

Name of Ri	parian-	Wetland A	rea: White	es Creek, No	rth Fork \		*
Team Obser	rvers: N	Mike Widt	ner, Jeff Je	sch, Keith W	eaver Da	te: 01/16/02	
Reach - Lar	ndmark	s:	· .				
Start	Splitte	er diversio	n in White	s Creek			
Stop	Field	Creek Gol	If Course		· · · · · · · · · · · · · · · · · · ·		· 
(See attache A Land use	ed table B 2&	<sup>1</sup> )	c	D	E	F	G
X WILD X	ORDZIIA	_ nonco		COMMERCIAL			
Sensitivity	to dist	urbance (	See attache	ed table <sup>2</sup> )			
□ VERY HIG	H	□нісн	[	□ moderate	x LOW	□ very lo	W

Yes	No	N/A	Hydrologic
х			Floodplain inundated in "relatively frequent" events (1-3 years)
х			Active/stable grade control
х			Sinuosity, width/depth ratio, and gradient are in balance with the landscape setting (i.e. landform, geology, and bioclimatic region)
	х		Riparian zone is widening
х			Upland watershed not contributing to riparian degradation

Yes	No	N/A	Water Quality (Pollution Sources)
х			Land use does not contribute to water quality degradation
х			Erosion does not degrade water quality
	х		Stormwater is not a significant source of water pollution
х			Fertilizers, pesticides, and herbicides do not impact water quality

Rosgen, Dave. Applied River Morphology. Page 5-5
 Rosgen, Dave. Applied River Morphology. Page 8-9

Yes	No	N/A	Vegetative	
Х.			Diverse age structure of vegetation	
x			Diverse composition of vegetation	
х			Streambank vegetation is comprised of those plants or put that have root masses capable of withstanding high stre	olant communities amflow events
x		<del></del>	Riparian plants exhibit high vigor	
х			Adequate vegetative cover present to protect banks and during high flows	dissipate energy
х			Plant communities in the riparian area are an adequate and/or large woody debris	source of coarse
x	<b>†</b>		Woody vegetation is not removed for flood control	

Yes	No	N/A	Erosion Deposition
х			Floodplain and channel characteristics (i.e., rocks, coarse and/or large woody debris) adequate to dissipate energy)
х			Point bars are revegetating
X			Lateral stream movement is associated with natural sinuosity
x			System is vertically stable
	х		Stream is in balance with the water and sediment being supplied by the watershed (i.e., no excessive erosion or deposition)

Whites creek flows split about equally between the North Fork and the South Fork at the concrete splitter, located just upstream from the government housing tract. The North fork flows south to north along a fault scarp that appears to be unsuitable for development. The stream exists in an undisturbed natural condition along this reach. Riparian vegetation is good to very good and provides habitat for wildlife. Flood flows are not confined by encroachment from development, therefore there is little risk of property damage or need for channel maintenance. The stream characteristics resist erosion and the channel geometry is in balance with the riparian setting.

The upstream watershed is contributing significant sediment loads to the creek. This should be controlled by enforcing construction site Best Management Practices and properly conveying storm water runoff from area roads.

Functional Rating:	Target Mag	- 6
☐ Proper Functioning Condition	•••	
x Functional – At Risk		
☐ Nonfunctional		
□ Unknown		
ii omnown		
Trend for Functional – At Risk		
Upward		
x Downward		
☐ Not Apparent		
Can factors contributing to unacceptable conditions be controlled by man	agement changes?	
x Yes		
□ No		
☐ Unknown		
If yes, what are the changes?		
☐ Stormwater runoff treatment		
Reduce application of fertilizers, herbicides, and pesticides		
☐ Encourage riparian buffer zones to replace sod adjacent to streams		
Public education	•	
☐ Reduce impact from livestock and animal wastes		
x Enforce construction site erosion and sediment control		
☐ Control impacts from vehicles		
☐ Control building-site encroachment		
☐ Control road encroachment		
x Other - control storm water runoff and associated sediment coming f	rom the Mount Rose Highw	ay.
V Office of Outfor agont when I mig appointed agonism agreement		•
Stream Destaration is appropriate?		
Stream Restoration is appropriate?		
x Yes	•	
□ No		
☐ Unknown		
If yes, what are the recommendations?		
x Modify watershed runoff and sediment loads		
☐ Raise channel bottom to reconnect stream to floodplain		
☐ Establish grade control structurally		
☐ Improve existing riparian corridor vegetation		
☐ Create floodplain (excavate)		
☐ Shape banks to reduce slope failure hazard		
☐ Install durable toe protection		
Implement soil bioengineering		
□ Other –		

Name of Riparian-Wetland Area: North Fork of Whites Creek

Team Observers: Mike Widmer, Jeff Jesch, Keith Weaver Date: 01/16/02

Reach – Landmarks:

Start Entrance to Wolf Run Golf Course crosses Whites Creek

Stop Highway 395 Crosses Whites Creek

Watershed Physical Description – Rosgen Morphological Description
(See attached table¹)

A\_\_\_ B\_\_ C\_\_ D\_\_ E\_\_ F 3b G\_\_\_

Land use

WILD x URBAN GAGRICULTURAL GOMMERCIAL GOPEN SPACE GFLOOD CONTROL GOTHER

Sensitivity to disturbance (See attached table²)

Yes	No	N/A	Hydrologic
	х		Floodplain inundated in "relatively frequent" events (1-3 years)
	х		Active/stable grade control
<del>, · · · · · · · · · · · · · · · · · · ·</del>	х		Sinuosity, width/depth ratio, and gradient are in balance with the landscape setting (i.e. landform, geology, and bioclimatic region)
	х		Riparian zone is widening
	х		Upland watershed not contributing to riparian degradation

X MODERATE

Low

☐ VERY LOW

Yes	No	N/A	Water Quality (Pollution Sources)
	x		Land use does not contribute to water quality degradation
	х		Erosion does not degrade water quality
	x		Stormwater is not a significant source of water pollution
	х	х	Fertilizers, pesticides, and herbicides do not impact water quality

HIGH

☐ VERY HIGH

<sup>&</sup>lt;sup>1</sup> Rosgen, Dave. Applied River Morphology. Page 5-5

<sup>&</sup>lt;sup>2</sup> Rosgen, Dave. Applied River Morphology. Page 8-9

Yes	No	N/A	Vegetative
X			Diverse age structure of vegetation
Х			Diverse composition of vegetation
х			Streambank vegetation is comprised of those plants or plant communities that have root masses capable of withstanding high streamflow events
х			Riparian plants exhibit high vigor
	X		Adequate vegetative cover present to protect banks and dissipate energy during high flows
х			Plant communities in the riparian area are an adequate source of coarse and/or large woody debris
х			Woody vegetation is not removed for flood control

Yes	No	N/A	Erosion Deposition
х			Floodplain and channel characteristics (i.e., rocks, coarse and/or large woody debris) adequate to dissipate energy)
	х		Point bars are revegetating
-	х		Lateral stream movement is associated with natural sinuosity
	х		System is vertically stable
	х		Stream is in balance with the water and sediment being supplied by the watershed (i.e., no excessive erosion or deposition)

Urban development and encroachment control the channel characteristics of Whites Creek in the reach that extends east from the Wolf Run Golf Course to Highway 395.

A box culvert and detention basin were installed to accommodate the Field Creek Subdivision and Wolf Run Golf Course. The construction resulted in filling the riparian area and encroaching on the Creek. This has caused significant channel degradation that includes, channel erosion and increased sediment loads to the creek. The encroachment may also increase the risk of flood damage to existing property downstream.

The Field Creek detention basin, located adjacent to Whites Creek, is a potential source of sediment. The steep, unvegetated slopes are eroding and should be stabilized.

Several property owners are in violation of the Washoe County Stream ordinance by filling riparian zones, building structures, and removing riparian vegetation within 35' of the Creek. Washoe County should control encroachment.

Existing development encroaches on Whites Creek downstream of the Field Creek box culvert. There is little opportunity for stream improvement along this reach due to its complexity. Numerous property owners, difficult access and proximity of structures to the creek are challenges to stream restoration. The confined channel results in flooding, high maintenance

costs associated with repairing bank erosion, water quality is impacted by sediment load and illicit discharges, and poor riparian vegetation provides little wildlife habitat.

Whites Creek is conveyed in a ditch along Wal Mart's north property line. The straight alignment increases the risk of bank erosion that contributes sediment to the creek. Poor riparian vegetation does not provide habitat benefits for wildlife. Stream bank erosion will result in ongoing maintenance costs. Untreated storm water runoff is directed from the Wal mart parking lot, to Whites Creek. Whites Creek is conveyed under Old Virginia City Road in undersized culverts. Evidence of overflow and associated erosion was observed at the stream crossing. This contributes sediment to the watershed.

The reach of Whites Creek along Wal Mart's north property line is a good site for stream restoration. This may involve excavation to create a floodplain, reshaping the channel banks and establishing riparian vegetation. This would result in improved flood characteristics, reduced maintenance costs and wildlife habitat that could be enjoyed by the public.

Functional Rating:  Proper Functioning Condition  Functional – At Risk  Nonfunctional  Unknown
Trend for Functional – At Risk  ☐ Upward  x Downward  ☐ Not Apparent
Can factors contributing to unacceptable conditions be controlled by management changes?  x Yes  No Unknown
If yes, what are the changes?
<ul> <li>x Stormwater runoff treatment</li> <li>x Reduce application of fertilizers, herbicides, and pesticides</li> <li>x Encourage riparian buffer zones to replace sod adjacent to streams</li> <li>x Public education</li> <li>Reduce impact from livestock and animal wastes</li> <li>x Enforce construction site erosion and sediment control</li> <li>Control impacts from vehicles</li> <li>x Control building-site encroachment</li> <li>x Control road encroachment</li> <li>x Other – reduce impact from landscaping practices by enforcing existing ordinances.</li> </ul>
Stream Restoration is appropriate?  x Yes  No  Unknown
If yes, what are the recommendations?
<ul> <li>x Modify watershed runoff and sediment loads</li> <li>□ Raise channel bottom to reconnect stream to floodplain</li> <li>□ Establish grade control structurally</li> <li>x Improve existing riparian corridor vegetation</li> <li>x Create floodplain (excavate)</li> <li>x Shape banks to reduce slope failure hazard</li> <li>□ Install durable toe protection</li> <li>x Implement soil bioengineering</li> <li>□ Other -</li> </ul>

Name of Riparian-Wetland Area: North Fork of Whites Creek Date: 01/16/02 Team Observers: Mike Widmer, Jeff Jesch, Keith Weaver Reach - Landmarks: 395 Freeway crosses the north fork of Whites Creek Start The north fork of Whites Creek converges with Thomas Creek Stop Watershed Physical Description – Rosgen Morphological Description (See attached table<sup>1</sup>) E C 5c D 5c B ...\_\_ Land use □ WILD □ URBAN □ AGRICULTURAL X COMMERCIAL □ OPEN SPACE X FLOOD CONTROL □ OTHER Sensitivity to disturbance (See attached table<sup>2</sup>)

Yes	No	N/A	Hydrologic
X			Floodplain inundated in "relatively frequent" events (1-3 years)
X			Active/stable grade control
	X		Sinuosity, width/depth ratio, and gradient are in balance with the landscape setting (i.e. landform, geology, and bioclimatic region)
X			Riparian zone is widening
	X		Upland watershed not contributing to riparian degradation

☐ MODERATE

☐ VERY LOW

Low

Yes	No	N/A	Water Quality (Pollution Sources)
		X	Land use does not contribute to water quality degradation
X			Erosion does not degrade water quality
		X	Stormwater is not a significant source of water pollution
	X		Fertilizers, pesticides, and herbicides do not impact water quality

☐ HIGH

X VERY HIGH

<sup>&</sup>lt;sup>1</sup> Rosgen, Dave. Applied River Morphology. Page 5-5

<sup>&</sup>lt;sup>2</sup> Rosgen, Dave. Applied River Morphology. Page 8-9

Yes	No	N/A	Vegetative
	X		Diverse age structure of vegetation
	X	·	Diverse composition of vegetation
	X	·	Streambank vegetation is comprised of those plants or plant communities that have root masses capable of withstanding high streamflow events
X			Riparian plants exhibit high vigor
	X		Adequate vegetative cover present to protect banks and dissipate energy during high flows
	Х		Plant communities in the riparian area are an adequate source of coarse and/or large woody debris
	X		Woody vegetation is not removed for flood control

Yes	No	N/A	Erosion Deposition
	X		Floodplain and channel characteristics (i.e., rocks, coarse and/or large woody debris) adequate to dissipate energy)
X			Point bars are revegetating
	Х		Lateral stream movement is associated with natural sinuosity
X			System is vertically stable
		X	Stream is in balance with the water and sediment being supplied by the watershed (i.e., no excessive erosion or deposition)

Whites Creek flows through Double Diamond Subdivision in engineered flood control channels, constructed within the last six years. The channels are approximately five feet deep and about one hundred thirty feet wide. Some of the channel banks are armored with rock rip rap and slopes range from 2:1 to 3:1. Defined low flow channels are incorporated into the design and disturbed areas were reseeded with appropriate riparian species.

The new stream is rejuvenating following its construction. Vegetation is emerging and the riparian area is already good habitat for wildlife, including small mammals, shore birds and hawks. The channel geometry is suitable for the landscape setting and wide enough to convey anticipated flood flows without damage to property or the environment.

Channel maintenance will be the main challenge in the near future. Tall Whitetop weeds threaten to out compete native species. Methods such as mowing, herbicide applications, grazing and pulling are potential weed management tools. Local agencies should partner with developers to test new weed control methods. Jurisdictions should allow some woody riparian vegetation to establish within the flood control channels. This would benefit wildlife and enhance channel characteristics that improve water quality. Upland watershed practices that contribute sediment to the stream should be controlled. This may include watershed restoration, enforcing construction site sediment control, and controlling storm water runoff from roads and parking lots.

Functional Rating:	
☐ Proper Functioning Condition	
x Functional – At Risk	. •
□ Nonfunctional	<u>√</u> .
☐ Unknown	
Trend for Functional – At Risk	
x Upward	
☐ Downward	
☐ Not Apparent	
Can factors contributing to unacceptable conditions be controlled by r	nanagement changes?
x Yes	
□ No	
☐ Unknown	
If yes, what are the changes?	
x Stormwater runoff treatment	
Reduce application of fertilizers, herbicides, and pesticides	
☐ Encourage riparian buffer zones to replace sod adjacent to streams	
x Public education	
☐ Reduce impact from livestock and animal wastes	
x Enforce construction site erosion and sediment control	
☐ Control impacts from vehicles	
☐ Control building-site encroachment	
☐ Control road encroachment	
☐ Other —	
Stream Restoration is appropriate?	
x Yes	
□ No	
☐ Unknown	
If yes, what are the recommendations?	
x Modify watershed runoff and sediment loads	
Raise channel bottom to reconnect stream to floodplain	
☐ Establish grade control structurally	
x Improve existing riparian corridor vegetation	
☐ Create floodplain (excavate)	
☐ Shape banks to reduce slope failure hazard	
☐ Install durable toe protection	•
☐ Implement soil bioengineering	<u>.</u>
x Other - implement weed management program to control Tall Wh	utetop

Name of F	Riparian-	Wetland	Area: Jone	s Creek \			
Team Obs	ervers:	Mike Wid	imer, Jeff J	esch	Da	te: 01/22/02	
Reach - L	andmark	s:	-,	·			
Start	Mont	reux proj	erty line cr	osses Jones C	reek		
Stop	Callahan Ranch Road crosses Jones Creek						
(See attack	hed table B 2&	s <sup>1</sup> )	iption – Ro	osgen Morpho D	logical Descrip	F	G
Land use							
x WILD	CURBAN	□ AGRIC	ULTURAL E	COMMERCIAL	X OPEN SPACE	☐FLOOD CONTROL	OTHER
Sensitivity to disturbance (See attached table <sup>2</sup> )							
□ VERY HI	GH	□ніG	Н	□ MODERATE	x LOW	□ VERY LC	W

Yes	No	N/A	Hydrologic
x			Floodplain inundated in "relatively frequent" events (1-3 years)
x			Active/stable grade control
х			Sinuosity, width/depth ratio, and gradient are in balance with the landscape setting (i.e. landform, geology, and bioclimatic region)
	х		Riparian zone is widening
	х		Upland watershed not contributing to riparian degradation

Yes	No	N/A	Water Quality (Pollution Sources)
х			Land use does not contribute to water quality degradation
x			Erosion does not degrade water quality
x			Stormwater is not a significant source of water pollution
X			Fertilizers, pesticides, and herbicides do not impact water quality

Rosgen, Dave. Applied River Morphology. Page 5-5
 Rosgen, Dave. Applied River Morphology. Page 8-9

Yes	No	N/A	Vegetative
х			Diverse age structure of vegetation
х			Diverse composition of vegetation
x	х		Streambank vegetation is comprised of those plants or plant communities that have root masses capable of withstanding high streamflow events
x			Riparian plants exhibit high vigor
х	х		Adequate vegetative cover present to protect banks and dissipate energy during high flows
х			Plant communities in the riparian area are an adequate source of coarse and/or large woody debris
x			Woody vegetation is not removed for flood control

Yes	No	N/A	Erosion Deposition
х			Floodplain and channel characteristics (i.e., rocks, coarse and/or large woody debris) adequate to dissipate energy)
	х		Point bars are revegetating
x			Lateral stream movement is associated with natural sinuosity
	х		System is vertically stable
х			Stream is in balance with the water and sediment being supplied by the watershed (i.e., no excessive erosion or deposition)

Jones creek is relatively undisturbed and exists in is natural condition along this reach. The land use is low density residential lots that typically do not encroach on the stream. A walking and bicycle trail parallels about one mile of the creek.

While the stream is healthy along the reach, there are some concerns. Channel erosion is occurring in areas that lack dense vegetative cover and unusual sediment deposits were observed. The rocky channel characteristics appear to resist erosion. Therefore, disturbances are typically limited to short segments, say thirty to sixty lineal feet.

The erosion observed along the creek may be caused by increased peak flows associated with upstream development. It is also possible that the creek experienced high flows following an unusually intense storm event, and the erosion is naturally occurring.

Functional Rating:	
☐ Proper Functioning Condition	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
x Functional – At Risk	
☐ Nonfunctional	•
□ Unknown	
Trend for Functional – At Risk	
Upward	
x Downward	
☐ Not Apparent	:
Can factors contributing to unacceptable conditions be controlled by mar	nagement changes?
☐ Yes	
□ No	•
x Unknown	
If yes, what are the changes?	
x Stormwater runoff treatment	
Reduce application of fertilizers, herbicides, and pesticides	
☐ Encourage riparian buffer zones to replace sod adjacent to streams	
☐ Public education	
☐ Reduce impact from livestock and animal wastes	
☐ Enforce construction site erosion and sediment control	
☐ Control impacts from vehicles	
☐ Control building-site encroachment	
☐ Control road encroachment	
Other –	
Outer –	
Stream Restoration is appropriate?	
x Yes	
□ No	
☐ Unknown	
If yes, what are the recommendations?	· ·
☐ Modify watershed runoff and sediment loads	
Raise channel bottom to reconnect stream to floodplain	
☐ Establish grade control structurally	
x Improve existing riparian corridor vegetation	
☐ Create floodplain (excavate)	
☐ Shape banks to reduce slope failure hazard	
☐ Install durable toe protection	
☐ Implement soil bioengineering	
Cl Other	

Name of Ri	Name of Riparian-Wetland Area: Jones Creek 2								
Team Obse	rvers: Jeff J	esch, Keith W	eaver	Da	te: 01/18/02				
Reach - La	ndmarks:			<u> </u>					
Start	Callahan l	Ranch Road cr	osses Jones Cre	ek		<del></del>			
Stop	Jones Cre	ek converges v	vith Galena Cre	ek					
(See attache  A  Land use	ed table <sup>1</sup> )	C	₹ <b>₹</b>	logical Descript		<b>G</b> 6			
		GRICULTURAL		□OPEN SPACE	□FLOOD CONTR	ol x low			
Sensitivity	to disturba	nce (See attac	hed table <sup>2</sup> )						
x very high	i [	l нісн	□moderate	Low	□ very	LOW			

Yes	No	N/A	Hydrologic
	х		Floodplain inundated in "relatively frequent" events (1-3 years)
	х		Active/stable grade control
	х		Sinuosity, width/depth ratio, and gradient are in balance with the landscape setting (i.e. landform, geology, and bioclimatic region)
	х		Riparian zone is widening
	х		Upland watershed not contributing to riparian degradation

Yes	No	N/A	Water Quality (Pollution Sources)
		х	Land use does not contribute to water quality degradation
	х		Erosion does not degrade water quality
x			Stormwater is not a significant source of water pollution
х			Fertilizers, pesticides, and herbicides do not impact water quality

Rosgen, Dave. Applied River Morphology. Page 5-5
 Rosgen, Dave. Applied River Morphology. Page 8-9

Yes	No	N/A	Vegetative
- No. 199	х		Diverse age structure of vegetation
•	х	·	Diverse composition of vegetation
	x		Streambank vegetation is comprised of those plants or plant communities that have root masses capable of withstanding high streamflow events
	х		Riparian plants exhibit high vigor
<del> </del>	х		Adequate vegetative cover present to protect banks and dissipate energy during high flows
	х		Plant communities in the riparian area are an adequate source of coarse and/or large woody debris
х			Woody vegetation is not removed for flood control

Yes	No	N/A	Erosion Deposition
	х		Floodplain and channel characteristics (i.e., rocks, coarse and/or large woody debris) adequate to dissipate energy)
X			Point bars are revegetating
	x		Lateral stream movement is associated with natural sinuosity
	х		System is vertically stable
	х		Stream is in balance with the water and sediment being supplied by the watershed (i.e., no excessive erosion or deposition)

Jones Creek is severely entrenched through the meadow setting. Four to six foot, unstable, vertical banks continue to erode and contribute sediment to the watershed. The once wet meadow is now de-watered. Sagebrush and rabbit brush are replacing wetland grasses as the water table lowers. Vegetation is slow to emerge, in the channel, due to constantly eroding soils. The creek no longer provides valuable wildlife habitat and there is very little value to the public. The high sediment load diminishes water quality.

The Galena Creek channel incised several feet during the 1997 flood. This new lowered elevation may have resulted in head cut erosion transitioning upstream from its confluence with Jones Creek. Additionally, undersized culverts crossing Callahan Ranch Road created flow velocities that exceeded the streams capacity to resist erosion and the armoring at the outfall of the culvert may have been inadequate. Potential restoration could include excavation to create a wide, revegetated floodplain. This would improve flood characteristics, enhance riparian vegetation that would attract wildlife, improve water quality and reduce maintenance costs associated with bank instability.

The meadow was subdivided into about 6 lots several years ago, however, only one lot has been developed. The Soil Survey of Northern Nevada indicates that the meadow development is at risk of flooding during unusually intense storm events and the risk can only be reduce by construction of major flood control structures. The developer should inform potential buyers of the risk of flooding before sale.

Name o	f Riparian-	Wetland Area: Ga	alena Creek		e some en
Team O	bservers:	Mike Widmer, Jef	f Jesch	Da	te: 01/22/02
Reach -	Landmark	ks:	<u></u>		
Start	Mour	nt Rose Highway o	crosses Galena C	reek	
Stop	Calla	han Ranch Road c	rosses Galena C	reek	
	ached table B 2a	i.		logical Descript	F G
x WILD	x URBAN	☐ AGRICULTURAL		□OPEN SPACE	□FLOOD CONTROL □ OTHER
Sensitiv	vity to dist	turbance (See atta	ched table <sup>2</sup> )		
□ very	HIGH	□нісн	□ moderate	x LOW	□ very low

Yes	No	N/A	Hydrologic
	х		Floodplain inundated in "relatively frequent" events (1-3 years)
		х	Active/stable grade control
х			Sinuosity, width/depth ratio, and gradient are in balance with the landscape setting (i.e. landform, geology, and bioclimatic region)
	х		Riparian zone is widening
X	1		Upland watershed not contributing to riparian degradation

Yes	No	N/A	Water Quality (Pollution Sources)
Х			Land use does not contribute to water quality degradation
x			Erosion does not degrade water quality
X			Stormwater is not a significant source of water pollution
х			Fertilizers, pesticides, and herbicides do not impact water quality

Rosgen, Dave. Applied River Morphology. Page 5-5
 Rosgen, Dave. Applied River Morphology. Page 8-9

Yes	No	N/A	Vegetative
X			Diverse age structure of vegetation
X			Diverse composition of vegetation
х			Streambank vegetation is comprised of those plants or plant communities that have root masses capable of withstanding high streamflow events
х			Riparian plants exhibit high vigor
x	·		Adequate vegetative cover present to protect banks and dissipate energy during high flows
х			Plant communities in the riparian area are an adequate source of coarse and/or large woody debris
х			Woody vegetation is not removed for flood control

Yes	No	N/A	Erosion Deposition
х			Floodplain and channel characteristics (i.e., rocks, coarse and/or large woody debris) adequate to dissipate energy)
X			Point bars are revegetating
X			Lateral stream movement is associated with natural sinuosity
X			System is vertically stable
x			Stream is in balance with the water and sediment being supplied by the watershed (i.e., no excessive erosion or deposition)

Galena Creek flows through a low density residential development in an undisturbed natural condition. Residential lots typically do not encroach on the stream channel and a pedestrian trail parallels the reach.

Galena Creek has responded to the 1997 flood event by incising six to twenty four inches. Roots are exposed and vertical banks exist. This appears to be a natural process not accelerated by development. The channel characteristics are very stable. Boulders, woody debris and roots resist further erosion. Water quality is good and healthy riparian vegetation provides good wildlife habitat. Erosion may continue to occur, during high stream flow, causing damage to trails and fences.

Functional Rating:	Ten ie Parkan
x Proper Functioning Condition	•
☐ Functional – At Risk	
☐ Nonfunctional	
☐ Unknown	
Trend for Functional – At Risk	
x Upward	
☐ Downward	
□ Not Apparent	
Can factors contributing to unacceptable conditions be controlled by manag	rement changes?
Yes	,o
□ No	
☐ Unknown	
L Chalown	
If yes, what are the changes?	
☐ Stormwater runoff treatment	
☐ Reduce application of fertilizers, herbicides, and pesticides	
☐ Encourage riparian buffer zones to replace sod adjacent to streams	
☐ Public education	
☐ Reduce impact from livestock and animal wastes	
☐ Enforce construction site erosion and sediment control	
☐ Control impacts from vehicles	
☐ Control building-site encroachment	
☐ Control road encroachment	
□ Other –	
Starow Bostowskiew is commemoisted	
Stream Restoration is appropriate?  Yes	
□ No	
☐ Unknown	
- Olikilowii	
If yes, what are the recommendations?	
☐ Modify watershed runoff and sediment loads	
☐ Raise channel bottom to reconnect stream to floodplain	
☐ Establish grade control structurally	
☐ Improve existing riparian corridor vegetation	
☐ Create floodplain (excavate)	
☐ Shape banks to reduce slope failure hazard	
☐ Install durable toe protection	
☐ Implement soil bioengineering	
□ Other –	

Name of Ri	parian-Wetland Area:	Galena Creek 2	•	
Team Obser	vers: Jeff Jesch, Keit	th Weaver	Dat	te: 01/18/02
Reach - La	ndmarks:		<u> </u>	
Start	Callahan Ranch Roa	ad crosses Galena Cr	eek	
Stop	Galena Creek enters	pleasant Valley	·	
(See attached A Land use x WILD □	B 28c3a C  URBAN □ AGRICULTUR  to disturbance (See	D	E	F G  G  GFLOOD CONTROL OTHER  x VERY LOW

Yes	No	N/A	Hydrologic
x			Floodplain inundated in "relatively frequent" events (1-3 years)
x			Active/stable grade control
X			Sinuosity, width/depth ratio, and gradient are in balance with the landscape setting (i.e. landform, geology, and bioclimatic region)
	х		Riparian zone is widening
x			Upland watershed not contributing to riparian degradation

Yes	No	N/A	Water Quality (Pollution Sources)
x			Land use does not contribute to water quality degradation
	T		Erosion does not degrade water quality
×			Stormwater is not a significant source of water pollution
X			Fertilizers, pesticides, and herbicides do not impact water quality

Rosgen, Dave. Applied River Morphology. Page 5-5
 Rosgen, Dave. Applied River Morphology. Page 8-9

Yes	No	N/A	Vegetative
х		1	Diverse age structure of vegetation
X			Diverse composition of vegetation
х			Streambank vegetation is comprised of those plants or plant communities that have root masses capable of withstanding high streamflow events
x			Riparian plants exhibit high vigor
X			Adequate vegetative cover present to protect banks and dissipate energy during high flows
X.			Plant communities in the riparian area are an adequate source of coarse and/or large woody debris
х			Woody vegetation is not removed for flood control

Yes	No	N/A	Erosion Deposition
х			Floodplain and channel characteristics (i.e., rocks, coarse and/or large woody debris) adequate to dissipate energy)
x			Point bars are revegetating
х			Lateral stream movement is associated with natural sinuosity
х			System is vertically stable
х		Stream is in balance with the water and sediment being sup watershed (i.e., no excessive erosion or deposition)	

Galena Creek flows from a broad meadow near Callahan Ranch Road to a steep rocky canyon. The creek is relatively undisturbed along the reach. The channel geometry is in balance with the watershed and topography. Vegetation is healthy and provides good wildlife habitat. Water quality is not affected in the reach.

The 1997 flood event incised the channel six to twenty four inches. The erosion appears to be a natural process, however erosion was accelerated downstream of the Callahan Ranch Road box culvert. The flood also damaged fill and the banks of the channel near the box culvert. The damage has since been repaired.

The north bank of the creek was bermed, apparently to protect a development in the adjacent meadow. The meadow was subdivided into about 6 lots several years ago. The Soil Survey of Northern Nevada indicates that the meadow development is at risk of flooding during unusually intense storm events. The berm along Galena Creek prevents the creek from spreading across the meadow during high flows, this increases channel erosion.

The 1997 flood caused a massive gully at the mouth of the canyon in Pleasant Valley. A forty foot wide, fifteen foot deep and five hundred foot long canyon was carved by the flood flows. Fortunately the stream corridor is undamaged and is currently in good condition.

Functional Rating:						
x Proper Functioning Condition	**************************************					
☐ Functional – At Risk						
□ Nonfunctional		·••				
□ Unknown						
Trend for Functional – At Risk						
Upward						
☐ Downward						
☐ Not Apparent						
Can factors contributing to unacceptable condition	is be controlled by	management changes?				
□ Yes						
□ No □ Unknown						
Li Unknown						
If yes, what are the changes?						
☐ Stormwater runoff treatment						
☐ Reduce application of fertilizers, herbicides, ar	nd pesticides					
☐ Encourage riparian buffer zones to replace sod adjacent to streams						
☐ Public education	•					
☐ Reduce impact from livestock and animal was	tes					
☐ Enforce construction site erosion and sediment	t control					
☐ Control impacts from vehicles						
☐ Control building-site encroachment						
☐ Control road encroachment						
□ Other –						
Stream Restoration is appropriate?						
☐ Yes						
□ No						
☐ Unknown						
If yes, what are the recommendations?						
☐ Modify watershed runoff and sediment loads						
☐ Raise channel bottom to reconnect stream to f	loodplain					
☐ Establish grade control structurally	<b></b>					
☐ Improve existing riparian corridor vegetation						
☐ Create floodplain (excavate)						
☐ Shape banks to reduce slope failure hazard						
☐ Install durable toe protection						
☐ Implement soil bioengineering						
Other –						

# Watershed Protection Program Stream Assessment Checklist

Name of R	iparian-	Wetland Area: G	alena Creek 3	the parties	1000					
Team Observers: Jeff Jesch, Keith Weaver Date: 01/18/02										
Reach - L	andmark	<b>s:</b>		·						
Start	Galer	Galena Creek enters Pleasant Valley at Maplewood Stables								
Stop	High	way 395 crosses C	Salena Creek							
Watershe (See attach A Land use		cal Description –  1  C	Rosgen Morpho	logical Descript  E	F G3					
	IRRAN	Y AGRICIII TURAI		□OPEN SPACE	□FLOOD CONTROL □ OTHER					
LI WILD A	CKBAIN	A AGRICOLIONIL	LI COMMENCE IE							
Sensitivit	y to dist	urbance (See atta	ched table <sup>2</sup> )							
□ VERY HI	GH	□нісн	x moderate	□ row	☐ VERY LOW					

Yes	No	N/A	Hydrologic
	х		Floodplain inundated in "relatively frequent" events (1-3 years)
x			Active/stable grade control
	х		Sinuosity, width/depth ratio, and gradient are in balance with the landscape setting (i.e. landform, geology, and bioclimatic region)
	х		Riparian zone is widening
x	<u> </u>		Upland watershed not contributing to riparian degradation

Yes	No	N/A	Water Quality (Pollution Sources)
	х		Land use does not contribute to water quality degradation
Х			Erosion does not degrade water quality
x			Stormwater is not a significant source of water pollution
х			Fertilizers, pesticides, and herbicides do not impact water quality

Rosgen, Dave. Applied River Morphology. Page 5-5
 Rosgen, Dave. Applied River Morphology. Page 8-9

Yes	No	N/A	Vegetative
х			Diverse age structure of vegetation
Х			Diverse composition of vegetation
x	,		Streambank vegetation is comprised of those plants or plant communities that have root masses capable of withstanding high streamflow events
X			Riparian plants exhibit high vigor
х			Adequate vegetative cover present to protect banks and dissipate energy during high flows
х			Plant communities in the riparian area are an adequate source of coarse and/or large woody debris
х			Woody vegetation is not removed for flood control

Yes	No	N/A	Erosion Deposition			
	х	х	Floodplain and channel characteristics (i.e., rocks, coarse and/or large woody debris) adequate to dissipate energy)			
x			Point bars are revegetating			
	х		Lateral stream movement is associated with natural sinuosity			
	х		System is vertically stable			
,,,,	х		Stream is in balance with the water and sediment being supplied by the watershed (i.e., no excessive erosion or deposition)			

#### Remarks

Galena Creek flows through horse ranch property along this reach. The upper section is narrow with very little floodplain. Encroachment from ranching operations and channelization cause bank erosion. Vegetation is good, provides wildlife habitat and stabilizes the channel banks. Water quality may be impacted by nutrients from ranching operations. Maintenance will be ongoing to keep flows in the bermed channel. Restoration opportunities are limited due to proximity of structures along the creek, but could include floodplain development and reshaping channel banks.

## **Summary**

Functional Rating:	. <u> </u>
☐ Proper Functioning Condition x Functional – At Risk	
X Functional — At Risk    Nonfunctional	
Unknown	
Circiowi	
Trend for Functional – At Risk	
☐ Upward	
☐ Downward	
x Not Apparent	
C. C. A. C. A. C.	nagement changes?
Can factors contributing to unacceptable conditions be controlled by man	ragement changes:
x Yes □ No	
☐ Unknown	•
Olikhowii	
If yes, what are the changes?	
☐ Stormwater runoff treatment	
☐ Reduce application of fertilizers, herbicides, and pesticides	
x Encourage riparian buffer zones to replace sod adjacent to streams	
☐ Public education	
x Reduce impact from livestock and animal wastes	
Enforce construction site erosion and sediment control	
Control impacts from vehicles	
☐ Control building-site encroachment ☐ Control road encroachment	
Other —	
Stream Restoration is appropriate?	
x. Yes	
□ No	
☐ Unknown	
If yes, what are the recommendations?	
☐ Modify watershed runoff and sediment loads	
Raise channel bottom to reconnect stream to floodplain	
☐ Establish grade control structurally	
x Improve existing riparian corridor vegetation	
x Create floodplain (excavate)	
x Shape banks to reduce slope failure hazard	
☐ Install durable toe protection	
x Implement soil bioengineering	
Other –	

# Watershed Protection Program Stream Assessment Checklist

Name of I	Name of Riparian-Wetland Area: Galena Creek 4									
Team Obs	ervers: J	eff Jesch	Date: 01/18/02							
Reach - Landmarks:										
Start	Highv	Highway 395 crosses Galena Creek								
Stop	Galen	a Creek enters St	eamboat Creek							
(See attack A Land use	hed table B	_ c	D	E	F	G 48:5  ☐ OTHER				
Sensitivi	•	ırbance (See atta	ched table²)  ☐ MODERATE	□ LOW	, D very lo	w				

Yes	No	N/A	Hydrologic
	X		Floodplain inundated in "relatively frequent" events (1-3 years)
	X		Active/stable grade control
X			Sinuosity, width/depth ratio, and gradient are in balance with the landscape setting (i.e. landform, geology, and bioclimatic region)
$\overline{\mathbf{x}}$			Riparian zone is widening
	X		Upland watershed not contributing to riparian degradation

Yes	No	N/A	Water Quality (Pollution Sources)
	Х		Land use does not contribute to water quality degradation
~	X		Erosion does not degrade water quality
X			Stormwater is not a significant source of water pollution
X		<u> </u>	Fertilizers, pesticides, and herbicides do not impact water quality

Rosgen, Dave. Applied River Morphology. Page 5-5
 Rosgen, Dave. Applied River Morphology. Page 8-9

Yes	No	N/A	Vegetative
	X		Diverse age structure of vegetation
	Х		Diverse composition of vegetation
	X		Streambank vegetation is comprised of those plants or plant communities that have root masses capable of withstanding high streamflow events
	X		Riparian plants exhibit high vigor
	X		Adequate vegetative cover present to protect banks and dissipate energy during high flows
	Х		Plant communities in the riparian area are an adequate source of coarse and/or large woody debris
X			Woody vegetation is not removed for flood control

Yes	No	N/A	Erosion Deposition
	Х		Floodplain and channel characteristics (i.e., rocks, coarse and/or large woody debris) adequate to dissipate energy)
X			Point bars are revegetating
X			Lateral stream movement is associated with natural sinuosity
X	<u> </u>		System is vertically stable
	X		Stream is in balance with the water and sediment being supplied by the watershed (i.e., no excessive erosion or deposition)

### Remarks

Galena Creek is very entrenched east of Highway 395, where it flows through cow pastures. Significant incision and bank erosion occurred during the 1997 flood. High stream flows continue to erode the channel banks as a new floodplain evolves. Livestock accelerate the bank erosion. Erosion and animal waste influence water quality. Riparian vegetation is beginning to emerge in the channel, however livestock grazing slows recovery. Wildlife habitat is minimal.

Restoration may include excavating a wide floodplain and revegetating with willows and other woody plants. The channel would benefit from fencing that prevents livestock from grazing in the creek.

## **Summary**

Functional Rating:		
☐ Proper Functioning Condition	e <del>e mi</del> gra	975.
x Functional - At Risk		
☐ Nonfunctional		
☐ Unknown		
Trend for Functional - At Risk		
x Upward		
☐ Downward		
☐ Not Apparent		+
Can factors contributing to unacceptable conditions be co	ontrolled by management	t changes?
x Yes	•	
□ No		
☐ Unknown		
If yes, what are the changes?		
22 y 663 W 1120 C 110 C		
☐ Stormwater runoff treatment		
Reduce application of fertilizers, herbicides, and pesti	icides	
x Encourage riparian buffer zones to replace sod adjacet		
x Public education		
x Reduce impact from livestock and animal wastes		
☐ Enforce construction site erosion and sediment control	1	
	71	
☐ Control impacts from vehicles		
☐ Control building-site encroachment		
☐ Control road encroachment		
☐ Other —		
Street Bartantian is appropriate?		
Stream Restoration is appropriate?		
x Yes		
□ No		
□ Unknown		
<b>7</b> 0 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		
If yes, what are the recommendations?		
☐ Modify watershed runoff and sediment loads		
☐ Raise channel bottom to reconnect stream to floodpla	ım	
☐ Establish grade control structurally		
x Improve existing riparian corridor vegetation		
x Create floodplain (excavate)		
x Shape banks to reduce slope failure hazard		
☐ Install durable toe protection		
x Implement soil bioengineering	·	
☐ Other —		

# Watershed Protection Program Stream Assessment Checklist

Name of R	Liparian-	Wetland Area: Br	owns Creek	٠					
Team Obs	ervers: N	Mike Widmer, Jef	Da	Date: 01/22/02					
Reach – La	andmark	s:							
Start	Joy Lake Road crosses Browns Creek								
Stop	Brow	ns Creek converge	es with Steamboa	at Creek near U	S395				
Watershe (See attack		*	~ · · · · · · · · · · · · · · · · · · ·	logical Descript	F	<b>G</b>			
Land use		<u> </u>	_			. []			
x WILD x	URBAN	☐ AGRICULTURAL	☐ COMMERCIAL	LIOPEN SPACE	□FLOOD CONTRO	LUOIHER			
Sensitivit	y to dist	urbance (See atta	ched table <sup>2</sup> )						
☐ VERY HIGH		□ ніgн	□ moderate	x low	□ VERY L	OW			

Yes	No	N/A	Hydrologic
x			Floodplain inundated in "relatively frequent" events (1-3 years)
	х		Active/stable grade control
х			Sinuosity, width/depth ratio, and gradient are in balance with the landscape setting (i.e. landform, geology, and bioclimatic region)
	х		Riparian zone is widening
			Upland watershed not contributing to riparian degradation

Yes ·	No	N/A	Water Quality (Pollution Sources)
х			Land use does not contribute to water quality degradation
х		·	Erosion does not degrade water quality
х			Stormwater is not a significant source of water pollution
X			Fertilizers, pesticides, and herbicides do not impact water quality

Rosgen, Dave. Applied River Morphology. Page 5-5
 Rosgen, Dave. Applied River Morphology. Page 8-9

Yes	No	N/A	Vegetative
	х		Diverse age structure of vegetation
X			Diverse composition of vegetation
	х		Streambank vegetation is comprised of those plants or plant communities that have root masses capable of withstanding high streamflow events
х			Riparian plants exhibit high vigor
	х		Adequate vegetative cover present to protect banks and dissipate energy during high flows
Х			Plant communities in the riparian area are an adequate source of coarse and/or large woody debris
x			Woody vegetation is not removed for flood control

Yes	No	N/A	Erosion Deposition
х			Floodplain and channel characteristics (i.e., rocks, coarse and/or large woody debris) adequate to dissipate energy)
X			Point bars are revegetating
х			Lateral stream movement is associated with natural sinuosity
X			System is vertically stable
х			Stream is in balance with the water and sediment being supplied by the watershed (i.e., no excessive erosion or deposition)

### Remarks

Browns Creek flows through low-density residential development and undeveloped canyons in the reach. The creek was significantly altered during the 1997 flood. This resulted in bank erosion and up to twenty inches of channel incision. The impact is probably a natural process. Riparian vegetation is healthy and provides good wildlife habitat. Development does not encroach on the stream and flood flows are conveyed without damaging property. Water quality is not impacted along the reach.

## **Summary**

Functional Rating:	· · · · · · · · · · · · · · · · · · ·
x Proper Functioning Condition	· F
☐ Functional – At Risk	
☐ Nonfunctional	
☐ Unknown	
Trend for Functional – At Risk	
Upward	
☐ Downward	
☐ Not Apparent	
Can factors contributing to unacceptable conditions be controlled by ma	nagement changes?
☐ Yes	
□ No	
□ Unknown	
If yes, what are the changes?	
if yes, what are the ordinges.	
☐ Stormwater runoff treatment	
☐ Reduce application of fertilizers, herbicides, and pesticides	
☐ Encourage riparian buffer zones to replace sod adjacent to streams	
☐ Public education	
☐ Reduce impact from livestock and animal wastes	
☐ Enforce construction site erosion and sediment control	
☐ Control impacts from vehicles	
☐ Control building-site encroachment	
☐ Control road encroachment	
Other –	
Stream Restoration is appropriate?	
□ Yes	
□ No	
☐ Unknown	
YC and the same of the months of the mon	
If yes, what are the recommendations?	
☐ Modify watershed runoff and sediment loads	
☐ Raise channel bottom to reconnect stream to floodplain	
☐ Establish grade control structurally	
☐ Improve existing riparian corridor vegetation	
☐ Create floodplain (excavate)	
☐ Shape banks to reduce slope failure hazard	
☐ Install durable toe protection	
☐ Implement soil bioengineering	•
□ Other –	

## Watershed Protection Program **Stream Assessment Checklist**

Name of R	iparian-	Wetland Are	a: Bailey	y Creek				
Team Obse	ervers:	Jeff Jesch		Date: 01/27/02				
Reach - La	ndmark	s:	· · · · · · · · · · · · · · · · · · ·					
Start	Mout	h of the Old	Virginia	City Road ca	nyon and east o	of residential area.		
Stop	Baile	y Creek ente	rs Steam	boat Creek				
(See attach  A  Land use  WILD x	B	c	<b>3,4,5 b</b>	DCOMMERCIAL	E  X OPEN SPACE		G	
□ VERY HIG	GH	х нісн	I	□ moderate	Low	□ VERY LO	w	

Yes	No	N/A	Hydrologic
x			Floodplain inundated in "relatively frequent" events (1-3 years)
	X		Active/stable grade control
Х	<del></del> -		Sinuosity, width/depth ratio, and gradient are in balance with the landscape setting (i.e. landform, geology, and bioclimatic region)
	х		Riparian zone is widening
x			Upland watershed not contributing to riparian degradation

Yes	No	N/A	Water Quality (Pollution Sources)
x			Land use does not contribute to water quality degradation
	x		Erosion does not degrade water quality
x			Stormwater is not a significant source of water pollution
<u>x</u>			Fertilizers, pesticides, and herbicides do not impact water quality

Rosgen, Dave. Applied River Morphology. Page 5-5
 Rosgen, Dave. Applied River Morphology. Page 8-9

Yes	No	N/A	Vegetative
	х		Diverse age structure of vegetation
	х		Diverse composition of vegetation
	х		Streambank vegetation is comprised of those plants or plant communities that have root masses capable of withstanding high streamflow events
	x		Riparian plants exhibit high vigor
	х		Adequate vegetative cover present to protect banks and dissipate energy during high flows
	х		Plant communities in the riparian area are an adequate source of coarse and/or large woody debris
х			Woody vegetation is not removed for flood control

Yes	No	N/A	Erosion Deposition
	х		Floodplain and channel characteristics (i.e., rocks, coarse and/or large woody debris) adequate to dissipate energy)
	x		Point bars are revegetating
x			Lateral stream movement is associated with natural sinuosity
X			System is vertically stable
	x		Stream is in balance with the water and sediment being supplied by the watershed (i.e., no excessive erosion or deposition)

### Remarks

Bailey Creeks flows through an alluvial fan in a low and medium density urban setting. The stream only flows following snow melt and storm events. The channel does not receive enough flow to promote riparian vegetation, therefore, plants are mostly upland species such as bitter brush, sage brush and rabbit brush. Existing and new development has encroached on the creek and has resulted in vertical instability and stream bank erosion.

Planners should avoid allowing new development to place fill in the floodplain, or the stream channel, as this results in erosion and reduced water quality.

## Summary

Functional Rating:  Proper Functioning Condition  x Functional – At Risk  Nonfunctional  Unknown
Trend for Functional – At Risk  Upward  x Downward  Not Apparent
Can factors contributing to unacceptable conditions be controlled by management changes?  x Yes  No  Unknown
If yes, what are the changes?
☐ Stormwater runoff treatment ☐ Reduce application of fertilizers, herbicides, and pesticides ☐ Encourage riparian buffer zones to replace sod adjacent to streams ☐ Public education ☐ Reduce impact from livestock and animal wastes ☐ Enforce construction site erosion and sediment control ☐ Control impacts from vehicles x Control building-site encroachment ☐ Control road encroachment ☐ Other —
Stream Restoration is appropriate?  ☐ Yes  x No  ☐ Unknown
If yes, what are the recommendations?
<ul> <li>☐ Modify watershed runoff and sediment loads</li> <li>☐ Raise channel bottom to reconnect stream to floodplain</li> <li>☐ Establish grade control structurally</li> <li>☐ Improve existing riparian corridor vegetation</li> <li>☐ Create floodplain (excavate)</li> <li>☐ Shape banks to reduce slope failure hazard</li> <li>☐ Install durable toe protection</li> <li>☐ Implement soil bioengineering</li> <li>☐ Other —</li> </ul>

### General Discussion on Water Quality and Sampling Procedures

Grab samples were taken using standard methods. The general chemistry analyses were conducted at the Nevada State Health Lab. The samples were analyzed for general minerals, total suspended solids, total kjeldahl nitrogen, total phosphate, fecal coliform, fecal streptococci, field pH, conductivity, dissolved oxygen (the meter proved unreliable) and temperature. An exception to this suite occurred with the sampling of three streams in Washoe Valley due to a miscommunication. Within each chapter certain constituents are tabled and discussed. The full water chemistry results are in the Appendix.

Total dissolved solids (TDS) is a compilation of the dissolved constituents within the water such as calcium, sodium, and bicarbonate. As an example, the Truckee River, near Verdi, has a TDS concentration in the range of 80 - 120 mg/l. The North Truckee Drain or Steamboat Creek have more variable TDS ranges of 300 - 600 mg/l. Total suspended solids (TSS) is a measure of the amount of sediment the streams are carrying. Total phosphate (TP) is a measure of both dissolved phosphate and organic phosphate. Nitrate and Total Kjeldahl Nitrogen (NO<sub>3</sub> and TKN) measure the dissolved and organic nitrogen (suspended in the water) respectively. Indicators of animal and human feces waste are measured by the concentration of fecal bacteria as fecal coliform and fecal streptococci. The fecal ratio is an indicator of whether or not the bacteria is human (>2) or animal (<1) derived where ratios between 1 and 2 are difficult to assess.

rederal standards recommend colony counts of <1 level colliform/100 lift of potable water for private supplies, such as wells, or the recovery of <1 fecal coliform/100ml per month from a public distribution system. If contamination exists, the construction of a fecal coliform/fecal streptococcus (FC/FS) ratio may provide an indication of the source of contamination, with a ratio of:

- 1. >4.1 indicating human contamination
- 2. 0.7-4.1 indicating mixed contamination of human and animal sources
- 3. <0.7 pollution by animal sources

The standard plate count is used to attain the total number of heterotrophs from a given source. In determining the total numbers of heterotrophic bacteria in water, one is faced with the same problems that are encountered with soil. Water organisms have great variability in physiological needs, and no single medium, pH, or temperature is ideal for all types. In spite of the fact that only small numbers of organisms in water will grow on nutrient media, the standard plate count can serve an important function in water testing. This count is performed by spread plating the water sample onto Plate Count Agar (PCA) then incubating these plates at two different temperatures. PCA medium is used to grow microorganisms that normally live in dilute environments, because it has fewer nutrients than a general purpose medium. By varying the temperature of growth, one can determine a total count of heterotrophic organisms (25°C) and a count of heterotrophic organisms that grow at body temperature (37°C). In general, potable waters may not contain >500 heterotrophic cells/ml (total count).

Note: Refer to the appendix for descriptions of m-Endo, KF Strep and PCA plate media.

13-Aug-01 1S-Feb-01 00-Inc-01 13-Dec-99 12-May-99 15-Oct-98 25-Mar-98 76-guA-11 79-nsL-12 96-nul-81 13-NOV-95 36-1qA-81 19-da2-61 12-Feb-94 02-Nov-93 £e-guA-Tr 59-Iul-72 29-Jun-93 69-nuL-10 y = 0.7777x + 476.4126-VON-40  $R^2 = 0.0732$ Se-1qA-80 16-q92-91 16-d9-J-40 06-InC-60 04-Dec-89 68-q92-80 68-1qA-01 88-VoN-80 14-Sep-88 17-Feb-88 78-luL-80 12-Jan-87 98-nuL-91 38-VON-81 22-Apr-85 1800 400 200 1600 1400 1200 1000 800 900 EC (micro S/cm)

North Truckee Drain Electrical Conductivity

North Truckee Drain Temperature

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North Truckee Drain Kjeldahl Nitrogen

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North Truckee Drain Flow

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#### NEVADA SIAIE HEALIH LABUKAIUK NEVADA DIVISION OF HEALTH 1660 N. Virginia Street Reno. Nevada 89503

(702) 688-1335

OEC 1 3 2001

DEPT. OF WATER PO 1813

All of the information below must be filled in ATER CHEMISTRY ANALYSIS: or the analysis will not be performed. Attn: Fees may apply to some types of samples. County Washoe YPE OF ANALYSIS: Township... Check here for ROUTINE DOMESTIC ANALYSIS.

Circle the constituents needed for PARTIAL ANALYSIS. General Location Thomas near Welcome way Source Address. AMPLING INSTRUCTIONS: **USE OF WATER: REASON FOR ANALYSIS:** The sample submitted must be representative of the source. Spring and surface water samples should be as free of dirt and debris as possible. Wells should be Loan □ Domestic drinking water umped thoroughly before sampling, changing the water in the casing at least Personal health reasons ☐ Geothermal ree times. Product water from filters should be sampled after running for ☐ Industrial or mining ☐ Purchase of the property about ten (10) minutes. Rental or sale of property ☐ Irrigation Widmer Date 10/24/01 Michael ampled by.. Other.... ☐ Subdivision approval Initials ..... . X Other ..... Reno SOURCE OF WATER: Filter Yes No Name Michael Widmer, water Resources Public Yes No Name ..... Surface..... Spring..... City Reno Casing diameter.....in. Well.....Depth..... State\_NV Hot.....Cold...... Casing depth.....ft. IN USE Yes No The results below are representative only of the sample submitted to this laboratory. PRINT OTHER DESIRED CONSTITUENTS BELOW FOR LABORATORY, USE ONLY 0.0280 39 0.87 1457 151813 Constituent ppm Constituent Constituent Constituent Constituent S.U. ppm T.D.S. @ 36 <del>103°</del> С. Chloride Iron Color 39 Hardness Nitrate Manganese Turbidity - 6 0.00 7.2" Calcium Alkalinity Copper pН 4 66 0.00 110 Magnesium Bicarbonate Zinc ٥ 0.05 SI6200 0.01 Sodium Carbonate Barium 0.03 Boron 0.0 Potassium Fluoride 003 Ellica Sulfate Arsenic 0.19 0.06 Collected by PO# 20104 pm=parts per million, milligrams per liter U. = Standard Units

#### IN TRIPLICATE (PLEASE PRINT OR TYPE)

## **NEVADA STATE HEALTH LABORATORY** University of Nevada School of Medicine/385 Mid Thomas

ppm = parts per million, milligrams per liter; S.U. = Standard Units

Reno, Nevada 89557 (775) 688-1335

## WATER CHEMISTRY ANALYSIS:

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All of the information below must be filled in or the analysis will not be performed.

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T.D.S. @ 180° C.	133	Chloride	4	Iron	0.57	Color	15	•		
Hardness	73	Nitrate -N	0.4	Manganese	0.06	Turbitity	12.0			
Calcium	16	Alkalinity	84	Copper	0.00	рН	7.88			
Magnesium	8	Bicarbonate	102	Zinc	0.01	EC	190			
Sodium	10	Carbonate	0	Barium	0.08	SI@2OC	-0.48			
Potassium	4	Fluoride	0.05	Boron	0.0					
Sulfate	4	Arsenic < C	.003	Silica	48					
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## **NEVADA STATE HEALTH LABORATORY**

University of Nevada School of Medicine/385

Reno, Nevada 89557 (775) 688-1335

L. Thomas 152165

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W	ATED	CHEN	<i>A</i> TCTD	VAI	NALYSIS	٠.
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201042

RECEIVED

All of the information below must be filled in or the analysis will not be performed.

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Calcium	24	Alkalinity	128	Copper	0.00	pН	8.05		
Magnesium	12	Bicarbonate	156	Zinc	0.01	EC	320		
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## NEVADA DIVISION OF HEALIH 1660 N. Virginia Street Reno, Nevada 89503

# HEC51458

DEC 1 3 2001 (702) 688-1335 All of the information below must be filled in or the analysis will do be performed: WATER CHEMISTRY ANALYSIS: Attn: Fees may apply to some types of samples. County Washoe TYPE OF ANALYSIS: .Range.. General Location Whites Creeke FieldCreek Check here for ROUTINE DOMESTIC ANALYSIS. Circle the constituents needed for PARTIAL ANALYSIS. Source Address O Silver Wolf **SAMPLING INSTRUCTIONS: USE OF WATER:** REASON FOR ANALYSIS: The sample submitted must be representative of the source. Spring and surface Domestic drinking water ☐ Loan water samples should be as free of dirt and debris as possible. Wells should be pumped thoroughly before sampling, changing the water in the casing at least three times. Product water from filters should be sampled after running for ☐ Geothermal Personal health reasons ☐ Industrial or mining Purchase of the property about ten (10) minutes. ☐ Rental or sale of property ☐ Irrigation Sampled by Michael Widmer Date 10/24/01 Other... ☐ Subdivision approval Initials ... X Other \_\_\_\_ Address 4930 Energy SOURCE OF WATER: REPORT TO: Name Michael Widmer, Water Resources Type..... Filter Yes No Name ..... Public Yes No Surface..... Well......Depth......ft. Casing diameter.....in. Hot.....Cold.... Casing depth.....ft. IN USE Yes No The results below are representative only of the sample submitted to this laboratory. PRINT OTHER DESIRED FOR LABORATORY USE GALY CONSTITUENTS BELOW 1852<sub>Constituent</sub> 1812 13.2 ppm LeoAstituent 0.0 Can Tillent S.U. Condituene 25 ලික Consutuent . T.D.S. @ 10 0.15 <1 180° C. 64 Chloride Color 1.6 0.01 0.7 Hardness Manganese **Turbitity** 28 Nitrate 7.89 0.00 30 Calcium Alkalinity Copper 83 EC 0.00 37 Magnesium Bicarbonate Zinc SI@20C -1.18 0.01 0 Sodium Carbonate Barium 0.0 Potassium Fluoride 0.03 Boron 28 Sulfate < 0.003Silica Arsenic DEC O 6 Aanı Collected by PWS I.D. ... SDWA-Pri..... RESULTS REPORTED 2nd .... Date Rec'd...

ppm=parts per million, milligrams per liter

S.U. = Standard Units

#### IN TRIPLICATE (PLEASE PRINT OR TYPE)

## **NEVADA STATE HEALTH LABORATORY**

University of Nevada School of Medicine/385

PO 2013 20 1042 Reno, Nevada 89557 (775) 688-1335

L. Whites

## **WATER CHEMISTRY ANALYSIS:**

All of the information below must be filled in

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City		Zi	p 8450	2		Yes No		Casing depth		
	T	he results belo	w are repres	entative only o	of the sample	submitted to	this labora			
		_		ORY USE ONL		· ·		PRINT OTHE CONSTITUEN		
Constituen032	<b>6</b> 5	Constituent 1	2.7 ppm	1 Constituent O.	O ****	*Constituent 2	L67 <sub>S.U.</sub>	Constituent	ppm	
T.D.S. @ 180° C.	62	Chloride	1	Iron	0.11	Color	10			
Hardness	28	Nitrate -N	0.0	Manganese	0.00	Turbitity	1.1			
Calcium	8	Alkalinity	32	Copper	0.00	рН	7.90			
Magnesium	2	Bicarbonate	39	Zinc	0.00	EC	80			
Sodium	5	Carbonate	0	Barium	0.01	SI@20C	-1.14			
Potassium	2	Fluoride	0.03	Boron	0.0					
Sulfate	8	Arsenic <	0.003	Silica	27	ļ	<del></del>	<u> </u>		
TP	0.02	TSS	<1					-		
TKN	0.26								<u></u>	
Fee			Remarks		······································			•••••	***************************************	
Collected by			المراق والماران الم	712-1			•••••	••••••		
O I SWC			: TOBEVER					ULTS REPOR	F	
			Canalian						••••••	
SDWA — Pri		Sec	Tanan.	DEC 2-1 2001						
1 st 2	2nd	3rd		· · · · · · · · · · · · · · · · · · ·	7E. 7.5.200					
		Init		•••••	· · · · · · · · · · · · · · · · · · ·		**************		(Rev. 6/99	
oom = parts per mil	lion, milligran	ns per liter; S.U. = 9	Standard Units				证产品 化	n Gradus V Pri SESCOPROCO	(אכיט פיטא)	

#### NEVADA DIVISION OF HEALTH 1660 N. Virginia Street Reno, Nevada 89503

(702) 688-1335

DEC 1 3 2001

1518

0-1561 (Rev. 4-92)

WASHOE COUNTY DEPT. OF WATER RESOURCES

## WATER CHEMISTRY ANALYSIS:

Attn: Fees may apply to some types of samples.

#### TYPE OF ANALYSIS:

Check here for ROUTINE DOMESTIC ANALYSIS.

Circle the constituents needed for PARTIAL ANALYSIS.

#### **SAMPLING INSTRUCTIONS:**

The sample submitted must be representative of the source. Spring and surface water samples should be as free of dirt and debris as possible. Wells should be pumped thoroughly before sampling, changing the water in the casing at least three times. Product water from filters should be sampled after running for about ten (10) minutes.

Sampled by Michael Widmer Date 10/24/01
Owner Washee County Phone 9544655
Address 4930 Energy Way
City Reno State NV

REPORT TO:

Name Michael Widmer, Water Resource:

Address 4930 Energy Way

City Reno

State NV Zin 89502

All of the information below must be filled in or the analysis will not be performed.

?	State NV	County Washoe
	Township 17 Range	9 Section 2
	General Location Gallna V Source Address @ County	-
	REASON FOR ANALYSIS:	USE OF WATER:
	☐ Loan	□ Domestic drinking water
	Personal health reasons	☐ Geothermal
	☐ Purchase of the property	☐ Industrial or mining
	☐ Rental or sale of property	☐ Irrigation
	☐ Subdivision approval	Other
	Other	Initials
4		· jorde
	SOURCE OF WATER:	•
	Filter  Yes  No	Туре
	Public  Yes  No	Name
	Spring	Surface
	Wellft.	Casing diameterin.
	HotCold	Casing depthft.
	IN USE   Yes   No	
- f	the sample submitted to this la	beratory.

The results below are representative only of the sample submitted to this laboratory.

-	-0.0936	93	C 67 FO	R LABORAT	ORY USE ON	LY	2 4 <b>5 4</b> 5	- T - G	PRINT OTHEI CONSTITUEN		
_	Constituent	ppm 2 3	○・6 7 Constituent	ppm	2 5 O. Constituent	. C -44 ppm	Constituent	S.U.	Constituent	ррп	
K)	T.D.S. @ _ <b>አ</b> ያያ C.	37	Chloride	7	Iron	1 15	Color				
	Hardness	40	Nitrate 3	3.1	Manganese	0.01	Turbidity	2.7			
_	Calcium	1.1	Alkalinity	£", ),}	Copper	0 00	рН	7,92			
_	Magnesium		Bicarbonate	51	Zinc	a ei	Series Anna	30			
_	Sodium	g and	Carbonate	্	Barium	.03	SI@20C	<b>0.</b> 20			
_	Potassium	2 -	Fluoride	0.03	Boron	٥.٥					
	Sulfate	ng dec	Arsenic <	a. ao a	9111Ja	ાં			Frankling Company of	©ा र द्राइक्कि	
	TKN	0.33	TSS	4				100	a bushing and a		
-	P04	0.02							UEC 0 6 /	001	
-	ee			Remarks					NELL PROPERTY.	TION	
(	Collected by	06#0	140			DOLL T	0	6/2 () a			
				μ	1 Mike	F09 = 1	<u> 10/0</u>	5/01 (28)	15A.S.		
_			,								
	DWA—Pri			AN 11/20/01 AN 11/2/10   RESULTS REPORTED							
1	st2	nd	3rd	·   <i>50</i> 1/	<u> </u>		11/21/				
		***************************************	Init		<u></u>	***************************************	P		NOV 2 9 200	)1	
	pm=parts per mill .U.=Standard Uni		per liter		······································		V				

#### NEVADA DIVISION OF HEALTH RECEIVED 151815

1660 N. Virginia Street Reno. Nevada 89503

DEC 1 3 2001

(702) 688-1335

		CH							

Attn: Fees may apply to some types of samples.

#### YPE OF ANALYSIS:

Check here for ROUTINE DOMESTIC ANALYSIS. Circle the constituents needed for PARTIAL ANALYSIS.

#### **AMPLING INSTRUCTIONS:**

The sample submitted must be representative of the source. Spring and surface water samples should be as free of dirt and debris as possible. Wells should be umped thoroughly before sampling, changing the water in the casing at least aree times. Product water from filters should be sampled after running for bout ten (10) minutes.

Michael Widmer Date 10/24/0

State NV

REPOR	T TO: Michae	( Widmen	r, water	Resource
Addr	H930	Energy	الماملا	1

City Reno

WASHOE COUNTY All of the information below must be filled in or the analysis will not be performed.

State: NV	County Washoe
Township 17 Range	9 Section L.C.
General Location Mid Grale	ena
Source Address Galena Can	<u>4011</u>
REASON FOR ANALYSIS:	USE OF WATER:
☐ Loan	<ul> <li>Domestic drinking water</li> </ul>
Personal health reasons	☐ Geothermal
☐ Purchase of the property	Industrial or mining
Rental or sale of property	☐ Irrigation
☐ Subdivision approval	Other
<b>Other</b>	Initials
<i>N. C.</i>	·
SOURCE OF WATER:	
	Type
	Name
Spring	Surface
WellDepthft.	
HotCold	Casing depthft.
IN USE Tes The	
of the sample submitted to this la	iboratory.

The results below are representative only of

0.1368	133	0.74 FOI	LABORAT	ORY USE ON	<b>Y</b> 30	5 1518	3 5	PRINT OTHER DESIRED CONSTITUENTS BELOW	
Constituent	ppm	Constituent	o. c	Constituent	ppm	Constituent	s.u.	Constituent	ppm
T.D.S. @ 103° C.	234	Chloride	7	Iron	0.65	Color	3.2		
Hardness	39	Nitrate N	01 2	Manganese	0.03	Turbidity	\$.5		
Calcium		Alkalinity	Marine Signature of the Control of t	Copper	0.00	pН	7.35	4	
Magnesium	THE STATE OF THE S	Bicarbonate	55	Zinc	0.00	EC	180		
Sodium	70	Carbonate	9	Barium	0.04	SI@200	-0.59		
Potassium	3	Fluoride	0.05	Boron	ು.೦				
Sulfate	, i	Arsenic <	೧.೦೦೨ -	Silica	50,				
TKN	0,21	TSS	5						
PO4	0.04			<del>                                      </del>			DE	0 6 2001	
Fee	<del></del>	<del> </del>	Remarks	<u>.                                    </u>	<del></del>		HEALT	y Parament	

HEALTMA
******
01 W8151
<u> </u>
,
01.6

ppm=parts per million, milligrams per liter S.U. = Standard Units

O-1561 (Rev. 4-92)

TELEASE FRUIT UK LIFE)

Date Rec'd...

ppm=parts per million, milligrams per liter S.U.=Standard Units

# NEVADA DIVISION OF HEALTHHE CEIVED 1660 N. Virginia Street

1660 N. Virginia Street Reno, Nevada 89503 DEC 1 3 2001 151816

NOV 2 9 2001

O-1561 (Rev. 4-92)

(702) 688-1335

WASHOE COUNTY

WATER CHEMISTI	RY ANALYSI	S:					low must be fill		
Attn: Fees may apply to sor				12			t be performed		
				State N	٧	Cou	inty washoe		
TYPE OF ANALYSIS: Check here for ROUTINI Circle the constituents nee		LYSIS.	S.	General Lo	ocationL.a		unty WOShoeSection		
Circle the constituents need to constituents need to constituents need to constituents need to constitue the constituents ample submitted must be rewater samples should be as free pumped thoroughly before samplifiere times. Product water from about ten (10) minutes.  Sampled by Michael County and Chael County Reno  REPORT TO:  Name Michael Wanderss H930 En City Reno  State NV	rions: representative of the second dirt and debris as pling, changing the wm filters should be second directly.  Widner Date Phony State	possible. We water in the complete after the complete after the complete after the complete after the complete the complet	ng and surface ells should be casing at least er running for	☐ Loan ☐ Personal health reasons ☐ Purchase of the property ☐ Rental or sale of property ☐ Subdivision approval ☐ Other ☐ Other ☐ Domestic drinking ☐ Geothermal ☐ Industrial or min ☐ Irrigation ☐ Other ☐ Initials ☐ Initials					
	· .	<del></del>		IN USE	☐ Yes ☐	No	sing depth		
Th.	e results below a				e supmitted	to this IZDOF	PRINT OTHE	R DESIRED	
0.0515 97 Constituent ppm	C. 72 FOR I	LABORAT	ORY USE ONL	<b>Y</b> 80	8 151   Constituent		CONSTITUEN Constituent		
T.D.S. @ 99	Chloride	7 7	Iron	P 4 1	Color	5			
Hardness 3 1	Nitrate	0.0	Manganese	5,04	Turbidity	2. 2. 2. 2. 3. 2.			
Calcium 2.0	Alkalinity	STATE STATE	Copper	1.40	pH	£ , 00			
Magnesium 4	Bicarbonate	61	Zinc	0.01	EC	160			
Sodium 10	Carbonate	¢	Barium	0,00	SIGNOC	-0.77			
Potassium 2	Fluoride	0.05	Boron	ಾ.೦					
Sulfate 3	Arsenic O	. <b>೧</b> ೦३	Sillo	37			Mander Garden State For State State State	e esta	
TKN 0.26	TSS	3					W Lock Pilling & W	<u> </u>	
P04 0.09							DEC 0 6	2001	
FeeCollected by PO + OC	51013-	Remarks	s	P04 =	T-P 10,	[25]01 (@ 8.	Marines MSA.S.		
SDWA—Pri	Sec	- Su	11/20/01		AIL.	12110 1	RESULTS RE	PORTED	

(PLEASE PRINT OR TYPE)

# NEVADA DIVISION OF HEALTH ECEIVED

Reno, Nevada 89503 (702) 688-1335

DEC 1 3 2001

## ATER CHEMISTRY ANALYSIS:

Attn: Fees may apply to some types of samples.

#### YPE OF ANALYSIS:

Check here for ROUTINE DOMESTIC ANALYSIS. Circle the constituents needed for PARTIAL ANALYSIS.

#### AMPLING INSTRUCTIONS:

The sample submitted must be representative of the source. Spring and surface water samples should be as free of dirt and debris as possible. Wells should be umped thoroughly before sampling, changing the water in the casing at least ree times. Product water from filters should be sampled after running for bout ten (10) minutes.

EPORT TO: Name Michael Widmer, Water Resources City Reno State NV

All of the information below must be filled in or the analysis will not be performed.

151865

0-1561 (Rev. 4-92)

State NV  Township 19N Range	
General Location Dog Crack	LCYCKES
Source Address	
REASON FOR ANALYSIS:	USE OF WATER:
☐ Loan	Domestic drinking water
Personal health reasons	☐ Geothermal
☐ Purchase of the property	Industrial or mining
☐ Rental or sale of property	☐ Irrigation
☐ Subdivision approval	☐ Other
Other	Initials
SOURCE OF WATER:	·.
Filter  Yes  No	Type
Public  Yes  No	Name
Spring	Surface
WellDepthft.	Casing diameterin.
HotCold	Casing depthft.
IN USE Yes No	

The results below are representative only o

-0.1310	236	0.57 FQ	R LABORATI	ORY USE ON	·b -31	8 1518	65	PRINT OTHEI CONSTITUEN	
Constituent	ppm	Constituent	ppm	Constituent	ppm	Constituent	s.u.	Constituent	ppm
T.D.S. @ 103° C.	172	Chloride	2	Iron	0.03	Color	7		
Hardness	117	Nitrate -N	0.0	Manganese	0.00	Turbidity	0.5		
Calcium	27	Alkalinity	146	Copper	0.00	рН	8.20	#12. 1 <b>4</b> 1%	
Magnesium	12	Bicarbonate	178	Zinc	0.00	EC	300	ř	
Sodium	12	Carbonate	0	Barium	0.04	SI@20C	0.28		
Potassium	2	Fluoride	0.04	Boron	0.0				
Sulfate	3	Arsenic <	0.003	Silica	42				1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
TKN	0.2	TP	0.03					950 0 B	2001
T55	3						-	Francis a series a designation	
ee			Remarks	the set of	51 7 · · · · · · · · · · · · · · · · · ·	Str	2.716	2.5.	
Collected by				111111	<u> </u>	-0/(1)	27/01	<u>.</u>	

	l 1		: I					_
ee	Remarks∕a	, , , , , , , , , , , , , , , , , , ,		les		9650		
Collected by		11/20/8	7/	47611 27	101	2	<b>#46245555546546</b>	
PWS I.D.	7		<b>.</b>	r • Maria da Maria da Santa da S		-hore the	******************	, mai
SDWA—PriSec		Your sample	for Nitra	was analyzed was (LFM) failed.	d in a baten	Muere me		
st3rd3rd	******************	Laboratory I	Offition was	······································		JLTS RFP(		••
Date Rec'dInitInit	***************************************				ııco	<u> </u>	,	,
ppm = parts per million, milligrams per liter 5.U. = Standard Units						<u>0                                    </u>	<u> </u>	

#### NEVADA DIVISION OF HEALTH

1660 N. Virginia Street Reno, Nevada 89503 DEC 1 3 2001

151864

(702) 688-1335

WASHOE COUNTY DEPT. OF WATER RESOURCES

## WATER CHEMISTRY ANALYSIS:

Attn: Fees may apply to some types of samples.

#### **TYPE OF ANALYSIS:**

Check here for ROUTINE DOMESTIC ANALYSIS.

Circle the constituents needed for PARTIAL ANALYSIS.

## **SAMPLING INSTRUCTIONS:**

The sample submitted must be representative of the source. Spring and surface water samples should be as free of dirt and debris as possible. Wells should be pumped thoroughly before sampling, changing the water in the casing at least three times. Product water from filters should be sampled after running for about ten (10) minutes.

Sampled by Michael Widner Date 10/24/01

Owner Washe County Phone 9544655

Address 4930 5 nergy way Po Bex 11130

City Reno State NV 39520

REPORT Name	TO: Michael	Widme	r, Wata	er Resour	c <i>e</i> s
		Energy		******************************	

City Keno
State NV Zip 89502

All of the information below must be filled in or the analysis will not be performed.

Township T19 N Range & General Location Alum CC	19E Section 16 Truckee River
Source Address	
REASON FOR ANALYSIS:	USE OF WATER:
☐ Loan	□ Domestic drinking water
Personal health reasons	☐ Geothermal
☐ Purchase of the property	Industrial or mining
☐ Rental or sale of property	☐ Irrigation
☐ Subdivision approval	Other
₩ Other	Initials
SOURCE OF WATER:	
Filter  Yes  No	Туре
Public  Yes  No	Name
Spring	Surface
Wellft.	Casing diameterin.

Casing depth.....ft.

The results below are representative only of the sample submitted to this laboratory.

Hot.....Cold.....

IN USE Yes No

-0.9021	747	0.74 FQ	R LABORAT	gry use oni	LY -4	6 1518	364	PRINT OTHE CONSTITUEN	R DESIRED TS BELOW
Constituent	ppm	Constituent	ppm	Constituent	ppm	Constituent	S.U.	Constituent	ррп
T.D.S. @ 103° C.	740	Chloride	14	lron	0.44	Color	12		
Hardness	410	Nitrate -N	0.0	Manganese	0.09	Turbidity	7.2		
Calcium	100	Alkalinity	102	Copper	0.01	рН	7.90		
Magnesium	39	Bicarbonate	124	Zinc	0.01	EC	1000	7.	
Sodium	45	Carbonate	0	Barium	0.06	SI@20C	0.32	4.1	
Potassium	5	Fluoride	0.18	Boron	0.0				:: ******
Sulfate	420	Arsenic	0.006	Silica	40			The less than 1 miles	See Street
TKN	0.58	TP	0.11					DEC 0 6 2	JU1
TSS	16							HENTHERE	IUN -
ee		• • • • • • • • • • • • • • • • • • •	Pamar40	120	21	120	121/01	<u> </u>	

TSS 16					FINA EC IUM
ee	Remarks.	1120/01	Ski	121/01 3	*************
Collected by	. ///	- / ( - /			RESULTS REPOR
PWS I.D	-	Your sample for	Al. trate was analy	zed in a batch where the	he NOV 2 9 200
DWA-PriSec.		Laboratory Fortifi	1 trate was analyzed Matrix (LFM) faile	d.	************************
st3rd3rd	*	•			
Date Rec'd	***************************************	*****************************			
A series of the	***************************************	***************************************	**************************************	***************************************	Q-1561 (Rev. 4-92)

#### RECEIVED NEVADA DIVISION OF HEALTH

1660 N. Virginia Street Reno, Nevada 89503

(702) 688-1335

DEC 1 3 2001 151863

All of the information decompast be filled in

## ATER CHEMISTRY ANALYSIS:

or the analysis will not be performed. Attn: Fees may apply to some types of samples. County Washoe YPE OF ANALYSIS: Township. Check here for ROUTINE DOMESTIC ANALYSIS. Hunter Cro General Location. Circle the constituents needed for PARTIAL ANALYSIS. Source Address AMPLING INSTRUCTIONS: USE OF WATER: **REASON FOR ANALYSIS:** The sample submitted must be representative of the source. Spring and surface □ Domestic drinking water ☐ Loan gater samples should be as free of dirt and debris as possible. Wells should be imped thoroughly before sampling, changing the water in the casing at least ree times. Product water from filters should be sampled after running for Geothermal Personal health reasons

bout ten (10) minutes.  Impled by Michael Widmer Date 10/24/01  wher Washee County Phone 9544655  Address 440 5 nergy west Po Box 11130	Rental or sale of property  Subdivision approval  Other	Irrigation OtherInitials
ily Reus State NV 89520	SOURCE OF WATER:	
REPORT TO:  Name Michael Widmer, Water Resources  Address 4930 Energy way  City Reno  AND  AND  AND  AND  AND  AND  AND  AN	Filter  Yes  No Public Yes  No Spring Depth ft.	Name

IN USE Yes No

	The	results below	are represe	ntative only	of the sampl	e submitted	to this labora		
-0 0257	120	O 64 FOI	R LABORAT	ORY USE ON	LY .0 -116	7 151	963	PRINT OTHEI CONSTITUEN	TS BELOW
-0.0357 Constituent	ppm	O.64 1 Constituent	ppm ppm	Constituent	ppm	Constituent	S.U.	Constituent	ppm
T.D.S. @ 103° C.	116	Chloride	1	Iron	0.16	Color	10		
Hardness	5.8	Nitrate -N	0.0	Manganese	0.02	Turbidity	1.6		
Calcium	15	Alkalinity	44	Copper	0.00	рН	7.75	# ".   #1"	
Magnesium	5	Bicarbonate	54	Zinc	0.00	EC	180	学	
Sodium	8	Carbonate	0	Barium	0.02	SI@20C	-0.91		
Potassium	3	Fluoride	0.05	Boron	0.0				
Sulfate	34	Arsenic <	0.003	Silica	36				
TKN	0.15	TP	0.05					0EC 0 0 20	11
TSS	45								
ee			Remarks	M		\$L	11/27/01	RESULTS	M REPORTED
		***************************************	**************	- J.C.II	120/01	d	<u> </u>	NOV 2	9 2001
WS I.D	***************	**********	***************************************				* · · · · · · · · · · · · · · · · · · ·	•	
i i kanada s		ec3rd	***********	Your samp Laboratory	le for A + 100 Fortified Matr	k was anal ix (LFM) fai	yzed in a batch led.	where the	**************************************

m = parts per million, milligrams per liter U. = Standard Units

## **NEVADA STATE HEALTH LABORATORY**

University of Nevada School of Medicine/385

Reno, Nevada 89557 (775) 688-1335

Fourth

PO 201042

WATER CHEMISTRY ANALYSIS:RECEIVED Attn: Fees may apply to some types of samples.

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		Ċ.			•	•		4.0	• ்	٠,	_
ü	- [1	П	MN	Ų	71	)	۵ĭ	4 1	1:	L	ı

TYPE OF ANALYSIS:

Check here for ROUTINE DOMESTIC ANALYSIS ADA STATE Circle the constituents needed for PARTIA

#### **SAMPLING INSTRUCTIONS:**

The sample submitted must be representative of the source. Spring and surface water samples should be as free of dirt and debris as possible. Wells should be pumped thoroughly before sampling, changing the water in the casing at least three times. Product water from filters should be sampled after running for about ten (10) minutes,

Sampled by M. Widmer Date 11/20/01
Owner Washoe Co Phone 9544655
Address Pabox 11130
City Rema State UV 89620

REPORT TO: Michael Widner

Address 4930 Energy way City Reuo Zip 89502

ppm = parts per million, milligrams per liter; S.U. = Standard Units

All of the information below must be filled in or the analysis will not be performed.

State	Cou	$_{\rm ntv}$ $W_{z}$	ashoe	_
Township	Range 10	l É	Section	<i>l</i> 7
Source Address D 6-26	th st w	cCorra	'n	
JULICE AUGIESS			***************************************	*************

REASON FOR ANALYSIS:	USE OF WATER:
☐ Loan	☐ Domestic drinking water
Personal health reasons	☐ Geothermal
☐ Purchase of the property	☐ Industrial or mining
Rental or sale of property	☐ Irrigation
☐ Subdivision approval	☐ Other
X Other	Initials
Raw water	•
SOURCE OF WATER:	
Filter  Yes  No	Туре
Public  Yes  No	Name
Spring	Surface
Well Depth ft.	Casing diameter in.
	Casing depthft.
IN USE: Yes No	

The results below are representative only of the sample submitted to this laboratory.

FOR LABORATORY USE ONLY  PRINT O' CONSTIT												
Constituent 81	3108 ppm	Constituent :	31.3 ppm1	4 Constituent	O.2 ppm3	4 1521 Constituent	98 <sub>S.U.</sub>	Constituent	ppm			
T.D.S. @ 180° C.	3080	Chloride	120	Iron	0.01	Color	7					
Hardness	1888	Nitrate -N	3.0	Manganese	0.01	Turbitity	0.5					
Calcium	360	Alkalinity	290	Copper	0.00	рН	8.42					
Magnesium	240	Bicarbonate	344	Zinc	0.00	EC	3500					
Sodium	236	Carbonate	5	Barium	0.03	SI@2OC	1.79					
Potassium	5	Fluoride	0.18	Boron	0.0							
Sulfate	1800	Arsenic	0.014	Silica	67							
TP	0.26	TSS	<1									
TKN	0.35											
Fee		•••••••										
Collected by				$\mathcal{M}$	12/20/2	7.]						
PWS I.D	PWS I.D. RESULTS REPORTED											
SDWA — Pri	S	ec	Temp.	Temp. Holding Time OK Tives No.								
lst 2	nd	3rd	. Helding.T	ime OK [	Tyes TN	,	***************************************					
Date Rec'd	Date Rec'd											
(Day 68)												

#### IN TRIPLICATE LEASE PRINT OR TYPE)

## **NEVADA STATE HEALTH LABORATORY** University of Nevada School of Medicine/385

Reno, Nevada 89557 (775) 688-1335

Shadow 152199

PO 201042

VATER CHEMISTRY ANALYSIS: n: Fees may apply to some types of samples.

RECEIVED

All of the information below must be filled in or the analysis will not be performed.

YPE OF ANA	i veie.		01 K	10V 20	- D	<b>/</b> V		wash	oe		
Check here for	r ROUTINE	DOMESTIC AN	ALYSIS.	FVADA	Township	20 N < ha	Range	ounty Wash 28 E Section	n 27		
Circle the con	stituents nee	ded for PARTIAI	ANAILYSIS.	THAUA STA	February Add	cation	rks Blu	d	*******************		
MPLING IN	STRUCTION	ONS:		Anound	TORY	11699p.m.	)				
		representative of	the source. Sp	ring and sur-	REASON	FOR ANALY	'SIS:	USE OF WATE	ER:		
		free of dirt and del			☐ Loan			☐ Domestic drinking water			
		ampling, changir			<del></del>	l health reasons		Geothermal			
st three times. P about ten (10) i		from filters show	ild be sampled	after running		e of the property		Industrial or n	nining		
about tell (10) i	initial in	-	11/20	101		or sale of propert	у	☐ Irrigation			
npled by		er D	ate	10		sion approval		☐ Other			
vnerV	~ /// S	FI	none	7.02.3	Other			Initials	*****************		
dress	4, <b>X</b>		nto 1/1/	_	₩ Nu	Wat-					
y	Ø	Si		89620		Yes No		Туре			
						Yes No		Name			
Name	Michael	el Widm	w		*						
Address	1930 E	el Widm nergy	Uay	••••••				Casing diameter			
City R.L.	uo	Z	······································			Cole					
State	<u> </u>	Z	ip	<del>2</del>	IN USE:	Yes No	)		·		
	1	The results belo	ow are repres	sentative only	of the sample	e submitted to	this labora	ntory.	<del></del>		
		FO	R LABORAT	ORY USE ONL	Y			PRINT OTHE CONSTITUE			
O.4438	896 ppm	O.61 1 Constituent	6.0 11 ppm	2.8 O. Constituent	1 -9 ppm	1521 Constituent	99 S.U.	Constituent	ppm		
T.D.S. @ 80° C.	728	Chloride	70	Iron	1.48	Color	20				
Hardness	210	Nitrate -N	1.8	Manganese	0.12	Turbitity	27.0		;.		
Calcium	51	Alkalinity	256	Copper	0.02	рH	8.37				
Magnesium	20	Bicarbonate	307	Zinc	0.02	EC	1200	<u> </u>			
Sodium	182	Carbonate	2	Barium	0.06	SI@20C	0.90				
Potassium	4	Fluoride	0.35	Boron	0.3						
Sulfate	260	Arsenic	0.015	Silica	34						
TP	0.18	TSS	52				n neof	HRTED			
TKN	111	1				RESU	ILTS REPO				
INN	1.15	J		<u> </u>		<u> </u>	cr 24 1	2001	<u> </u>		
æ	**************		Remarks	······//		u					
allamend by			***************************************	$\mathcal{M}$	12/2016	<del>)                                    </del>	Roma	ine Limite	)		
опества ву	••••••				<del> </del>		Cal	ikm 10	p pm.		
WS LD		,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	***************************************		1	aalad	May	inestum 10	CPM		
ur nomes speedssesses				***************************************	· · · · · · · · · · · · · · · · · · ·	jejpyje	Sind	ium 10	ppin		
DWA — Pri		Sec				······································	<u>F</u> C.1	(12) Y WIN Y (23)	e p.p.a.v		
. •			emp.	74. The second s		•••••••		0.10			
št 2	2nd	3rd		Time OK []		0		ganese le	OH HAN		
			1	n/ed.Correctly	/			per 0.	U Sow		
		Init.	•	••••••	*****************			nc	OLY DERM		
m = parts per mil	llion, milligran	ns per liter; S.U. = !	Standard Units					arium 0.	2 pon		
	· *						5	oron o	2 ppm		

#### IN TRIPLICATE (PLEASE PRINT OR TYPE)

## **NEVADA STATE HEALTH LABORATORY**

University of Nevada School of Medicine/385 20133 201042

Lower North

Reno, Nevada 89557 (775) 688-1335

WATER CHEMISTRY ANALYSIS:

ppm = parts per million, milligrams per liter; S.U. = Standard Units

RECEIVED

All of the information below must be filled in or the analysis will not be performed.

ittn: Fees may app	ply to some t	ypes of samples.	[198] 선생 보기			garanta and Africa Control	of the state of t	or ne berrormen				
YPE OF ANAL Check here for Circle the cons	and the second	DOMESTIC ANA ded for PARTIAL		IOV 15 PM : EVADA STA			Range 2  Mo lot	ounty Wash O Section	n 11			
The sample submit ace water samples see pumped thorouge east three times. Pror about ten (10) no sampled by	ted must be should be as in the before so roduct water ninutes, will make the control of the con	ONS: representative of tree of dirt and debrampling, changing from filters should Phosphology State Widman Phosphology Widman P	he source. Spis as possible, the water in the sampled	oring and sur- Wells should the casing at after running	REASON FOR ANALYSIS:  Loan  Personal health reasons Purchase of the property Rental or sale of property Subdivision approval Other  SOURCE OF WATER: Filter Yes No Public Yes No Spring Well Depth Hot Cold Casing depth  USE OF WATER: Geothermal Industrial or mining Irrigation Other Initials  Type Surface Surface Casing depth ft. Casing depth  ft.							
State		Zip	6750	<u></u>	IN USE:	Yes No						
	1	he results belov	v are repres	sentative only	of the sample	e submitted to	this labora	tory.	1			
FOR LABORATORY USE ONLY									PRINT OTHER DESIRED CONSTITUENTS BELOW			
Condition 98	67 <sub>ppm</sub>	Constituent 16	.4 ppm	Constituent O.	O -69	7 Constituent 21	66 <sub>s.u.</sub>	Constituent	ppm			
T.D.S. @ 180° C.	532	Chloride	39	Iron	0.28	Color	10					
Hardness	296	Nitrate -N	0.6	Manganese	0.49	Turbitity	6.7					
Calcium	64	Alkalinity	264	Copper	0.00	pН	7.94					
Magnesium	33	Bicarbonate	322	Zinc	0.01	EC	900					
Sodium	74	Carbonate	0	Barium	0.09	S1@20C	0.59					
Potassium	6	Fluoride	0.13	Boron	0.2			Ť				
Sulfate	140	Arsenic C	.005	Silica	35							
TP	0.18	TSS	6									
TKN	0.53		,									
Fee	••••••••••••		Remarks		\$4.17.120/01							
SUWA — Pri Sec					DEC 2 4 2001							
1st 2r	la	3rd										

#### IN TRIPLICATE EASE PRINT OR TYPE)

## **NEVADA STATE HEALTH LABORATORY**

University of Nevada School of Medicine/385

Reno, Nevada 89557

Marina

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m = parts per million, milligrams per liter; S.U. = Standard Units

PO 20133 201042

(775) 688-1335

152164

(Rev. 6/99)

	and the control of th	ANALYSIS ypes of samples.	<b>RE</b>	CEIVED			and the second second	low must be fille ot be performed	<ul> <li>34 4 3074 47 671</li> </ul>			
			Ol Mou	10	J	V		ounty Wash	oe_			
Check here for	r ROUTINE	DOMESTIC ANA	LYSIS	ADA CTATE	Township		Range?	Section Section	n 10			
Circle the con	stituents need	led for PARTIAL A	MEN STA	LABORATO	General Loc Source Add ج	ress	a disch	e(Gf.				
MPLING IN	STRUCTIO	NS: representative of the	na cource Cn	ring and our	DEACON	FOR ANALY	<b>919</b> .	USE OF WATE	:R:			
ace water samples	should be as f	ree of dirt and debr	is as possible.	Wells should	Loan	FORMINALI	<b>545.</b>	☐ Domestic drinking water				
		ampling, changing from filters should				health reasons e of the property		☐ Geothermal ☐ Industrial or mining				
about ten (10)	nimutes					e of the property or sale of property		☐ Irrigation				
Sampled by	hee Co	er Date	e!!!!\! ne 954	4655		sion approval	:	Other				
dress 10130	K 11130	Stat		0460	Jacouner	Raw W	utur	Atticutio	•			
City <b>R. L.V.</b>	)	Stat	e	89520		OF WATER: Yes  No		Туре				
EPORT TO:	Mich a	el Widm				Yes No		Name	••••••			
Address 4	1930 E	nergy w	law	•••••••		Donth		Surface				
City R.		Zip	2000	······································	Hot	Cold		Casing depth				
State						Yes No						
	T	he results below	are repres	sentative only o	of the sample	e submitted to	this labora					
		FOR	LABORAT	ORY USE ONL				PRINT OTHER DESIRED CONSTITUENTS BELOW				
-0.2287	660 ppm	Q.58 16 Constituent	5.0 1 ppm	Constituent	O -18	2 1521 Constituent	64 s.u.	Constituent	ppm			
1.D.S. @ 180° C.	496	Chloride	38	Iron	0.34	Color	7					
lardness	345	Nitrate -N	0.1	Manganese	0.76	Turbitity	5.9		·			
Calcium	74	Alkalinity	270	Copper	0.01	pH	7.75					
Magnesium	39	Bicarbonate	329	Zinc	0.02	EC	850		ļ.,			
Sodium	43	Carbonate	0	Barium	0.10	SI@20C	0.48					
Potassium	7	Fluoride	0.06	Boron	0.2		···					
Sulfate	130	Arsenic	0.005	Silica	34							
TP	0.4	TSS	65									
TKN	0.47					<u> </u>						
Fe		••••••	Remarks	***************************************		Ma						
Collected by		••••••	· mituer ex	<u> </u>		· · · · · · ·	120/0/	•••••	······			
ws I.D		•••••	* COCHIVE		i jus		PESI	ILTS REPORT	D			
		fall La	Condition	40.00				EC 2 4 2001				
SDWA — Pri	S	EC	Temp									
<b>3</b> st 2	nd	3rd	Police (approximation of the state of the st									
ate Rec'd		Init	( ) Press	1								

IN TRIPLICATE (PLEASE PRINT OR TYPE)

### **NEVADA STATE HEALTH LABORATORY** University of Nevada School of Medicine/385

152169

201042

ppm = parts per million, milligrams per liter; S.U. = Standard Units

Reno, Nevada 89557

(775) 688-1335

WATER CHEMISTRY ANALYSIS:

RECEIVED

Boyn for All of the information below must be filled in or the analysis will not be performed.

Attn: Fees may ap	ply to some t	ypes of samples	กเมกเ	/   5 DM 0.			•	ot be performed	27 11 11 11 11	
TYPE OF ANA	LYSIS:		UI NU	/ 15 PM 3:	StateN	V	Co	ounty Wash	10 6	
Check here for	or ROUTINE	DOMESTIC AN	VALYSIS. NE	ADA STATI	Township		Range	Section Section	on	
Circle the cor	istituents need	ied for PARTIA	L ANALYSIST	LABORAT	OR General Lo	cation 13.0 Y.	altan	Section		
SAMPLING IN	STRUCTIC	ONS:			Source Add	iress				
The sample submi						FOR ANALY		USE OF WAT		
face water samples	should be as f	ree of dirt and de	bris as possible.	Wells should	☐ Loan			Domestic drinking water		
be pumped thorous least three times. F					_	l health reasons		Geothermal		
for about ten (10)	minutas	· ·		•		e of the property		Industrial or r	nining	
Sampled by M.	widm	er D	Date 11/15/	01		or sale of propert sion approval	ty	☐ Irrigation ☐ Other		
Sampled by .M Owner	hae Co	P	hone 954	4655	,		L		*******************	
Address 1013 o	X 11130	 		00	<i></i>	Raw 6	MILE			
City RANG	3	S	tate	89 C2	SOURCE	OF WATER:				
				-12 20	rikei C	Yes 🔲 No		Туре		
Name	Micha.	el Widn	ner			Yes 🖸 No		Name		
Address5	1930 E	112594	Way	********		Depth		Casing diameter		
City R.L.	w	nergy. Z	י יייי אי אי	······				Casing depth		
State NV	•	Z	ip 84507	<u></u>		Yes No		<del>-</del> • • •		
	Т	he results bel	ow are repres	entative only	of the sample	e submitted to	this labora	tory.		
0.000				ORY USE ONL		E 4504	60	PRINT OTHER DESIRED CONSTITUENTS BELOW		
-0.0805 Constituent	462 ppm	O.62 2 Constituent	27.7 10 ppm	Constituent 0.	bbw	7 1521 Constituent	S.U.	Constituent	ppm	
T.D.S. @ 180° C.	374	Chloride	17	Iron	0.39	Color	5			
Hardness	172	Nitrate -N	1.5	Manganese	0.05	Turbitity	11.0			
Calcium	41	Alkalinity	214	Copper	0.00	рН	8.44			
Magnesium	17	Bicarbonate	256	Zinc	0.01	EC	600			
Sodium	58	Carbonate	2	Barium	0.12	SI@20C	0.82			
Potassium	7	Fluoride	0.60	Boron	0.3	<u> </u>				
Sulfate	64	Arsenic	0:022 8	Silica	59 					
TP	0.14	TSS	16					-		
TKN	0.62	<u> </u>		·.		<u> </u>				
Fee			Remarks	***************************************	***************************************		/ 1 -			
Collected by							AIC 121	Z0/01		
			1.5	editore			<u>``</u>	- / - /		
PWS I.D	••••••	***************************************	2.7056.1806		ig The links	enert C	<u></u>			
CDWA D-		•		1 1 39	ang	<i></i>	***************************************			
SDWA — Pri	5	CC	Laino	······································				RESULTS R	EPORTED	
1st 2	nd	3rd	. المؤرزونانات		V.,					
Data Bao'd		T=:•	ָרִייִייִּיִּייִייִּיִּיִייִּיִּיִּיִּיִּי		19 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		***************************************	UEC 2	7. ZUU]	

W01 27579

WO1 27580

Sam, Michael Widmer Location Thomas Cr. & Allow Creek	Date 10/24/01 Hour 930 Am
Location Thomas Cr. O Allow Creek	County Waskoe
Public Water System NONL	
ID No For Compliance	
Chlorine Residual Not for Compliance	THIS SPACE FOR LAB USE ONLY
YOUR RETURN ADDRESS	Invalid Sample Please Repeat
Name Michael Widner	Received > 30 Hrs 🖸 Confluent Growth
Address WCDWR	Received > 20°C
TO ASSURE IDENTIFICATION, PLEASE LABEL SPECIMEN BOTTLE WITH NAME ALSO.	Creek water No dilution  Raw or Wastewater Analysis
☐ Drinking Water Analysis	Methods:
Methods:	☐ Membrane Filter ☐ MPN
☐ Membrane Filter ☐ MPN	Other
☐ Presence/Absence ☐ Other	Test Required: (Dilutions if Needed) RESULTS
Results: PRESENT ABSENT	Total Coliform 1: /100 ml.
Total Coliform	Fecal Coliform 1:
E. Coli	E. Coli 1:/100 ml.
Date Tech	Fecal Streptococcus 1: 54/100 ml.
The absence of coliforms meets Nevada State Health	Enterococcus 1: /100 mi.  Date
The absence of comornis meets to safe drinking water.	1Rev 10-47

WATER BACTERIOLOGY

5=0.24 livestock

A BYOILD

	1.4<
som, Michael Widmer	Date 11/15/01 Hour 1
Location Mid Thomas	County Washee
Public Water System	W01 28094
ID No For Compliance	
Chlorine Residual Not for Compliance	
YOUR RETURN ADDRESS	Invalid Sample Please Repeat 🚨
Name Michael Widmer	Received > 30 Hrs Confluent Growth
Address WCDWZ	Received > 20°C
Address	> 200 Other bacteria Other
TO ASSURE IDENTIFICATION,	Sediment
PLEASE LABEL SPECIMEN BOTTLE	Creek vote &
WITH NAME ALSO.	Raw or Wastewater Analysis
☐ Drinking Water Analysis	Methods: di lute 3:100 and 1:100
Methods:	Membrane Filter A S A MEN
☐ Membrane Filter ☐ MPN	201111 7
Presence/Absence Other	Test Required: (Danis)
Results: PRESENT ABSENT	Total Culiform 1:
Total Coliform	Fecal Coliform 1:
E. Coli	E. Coli 1:/100 m
Date Tech	1200
A tie Alamaia Chain Liaghh	Enterococcus 1:
The absence of coliforms meets Nevada State Health Division bacteriological standards for safe drinking water.	T /1-18-0/ (Rev 10
	1

WATER BACTERIOLOGY

1.10 20 110 100 100 100

Derburg

Tid asker k-

# RSITY OF NEVADA SCHOOL OF MEDICINE 1660 N. Virginia Street Reno, Nevada 59503

Reno, Nevada 59503	
sam, Mike Widner	Date_11-15-0(Hour10:00)
Sam, Mike Widner Location Lower Thomas Creek	County Washoe
Public Water System	W01 28098
ID No For Compliance	W01 28099
Chlorine Residual Not for Compliance	
YOUR RETURN ADDRESS	Invalid Sample Please Repeat
Name Mike Wilme	Received > 30 Hrs Confluent Growth
Address QC	Received > 20°C
TO ASSURE IDENTIFICATION, PLEASE LABEL SPECIMEN BOTTLE WITH NAME ALSO.  Drinking Water Analysis Methods:	Sediment So
☐ Membrane Filter ☐ MPN	Other
☐ Presence/Absence ☐ Other	Test Required: (Dilutions if Needed) RESULTS
Results:  Total Coliform	Fecal Coliform 1:
Date Tech	Fecal Streptococcus 1: / KSLE 1/100 mi.
The absence of coliforms meets Nevada State Health Division bacteriological standards for safe drinking water.  WATER BAC	Enterococcus 1:/100 ml.  Date/1 - U
WALER DAG	· · · · · · · · · · · · · · · · · · ·

1:10 50 = 0.4 130 litestock 1:100

1500 N. Virginia Street Reno, Nevada 69503

Date 11/15/01 Hour 2 Michael Widmer Location L. whites @ S. Virginia Washoc County. Public Water System ..... W01 28092 For Compliance .... W01 28093 Not for Compliance .. Chlorine Residual \_\_\_ YOUR RETURN ADDRESS Invalid Sample Please Kepeat 👊 Name Michael Widmer Received > 30 Hrs ... - Confluent Growth... Received > 20°C ... Address WCDWR > 200 Other bacteria ... D Other TO ASSURE IDENTIFICATION, PLEASE LABEL SPECIMEN BOTTLE WITH NAME ALSO. Raw or Wastewall Mana Methods: Drinking Water Analysis ☐ MPN ☐ Membrane Filter Methods: ☐ MPN Other ..... ☐ Membrane Filter Test Required: (Dilutions if Needed) ☐ Other ..... ☐ Presence/Absence Total Coliform 1: \_\_\_\_\_ Results: ABSENT PRESENT Fecal Coliforn 1: \_\_\_\_\_ S. A.S. C. /100 n Total Coliform ..... E. Coli 1: \_\_\_\_\_\_ /100 ml. E. Coli ..... Fecal Streptococsus 1: \_\_\_\_\_\_/100 r Tech Enterococcus 1: Date 11-18-01 Tech 101-18-11 The absence of coliforms meets Nevada State Health Division bacteriological standards for safe drinking water.

WATER BACTERIOLOGY

50 = 0.62 80 - Wiesock

AB40150 "

ocation Whites Creeko	Date 10/24/01 Hour 9 Am
oration Whites Creeko	County Washac
Public Water System	
D No For Compliance	
Chlorine Residual Not for Compliance	THIS SPACE FOR LAB USE ONLY
YOUR RETURN ADDRESS	Invalid Sample Please Repeat 🔾
Name Michael Widmer	Received > 30 Hrs 🖸 Confluent Growth
Address WCDWR	Received > 20°C 🗀 < 100 mls
Address	> 200 Other bacteria 🛈 Other
TO ASSURE IDENTIFICATION, PLEASE LABEL SPECIMEN BOTTLE WITH NAME ALSO.	Creek water, as dilution  (Raw or Wastewater Analysis
☐ Drinking Water Analysis	Methods:
Methods:	☐ Membrane Filter ☐ MPN
☐ Membrane Filter ☐ MPN	Other
☐ Presence/Absence ☐ Other	Test Required: (Dilutions if Needed) RESULTS
Results: PRESENT ABSENT	Total Coliform 1:/100 ml.
Total Coliform	Fecal Colliform 1:/100 ml.
E. Coli	E Cali 1 / 100 IIII.
Date Tech	Pecal Speptococcus 1: > 60/100 mi.
Post Stilling	Enterococcus 1:
The absence of coliforms meets Nevada State Health Division bacteriological standards for safe drinking water.	Date (Rev 10-97

WATER BACTERIOLOGY

5 2:0.5 livestock

RSITY OF NEVAL 1660 N. V. Reno, N	irgi W01		W01 27582	
Sam, Michael Widmer Location Galena Creek @ Pa		Date 10/24	1/01 Hour 1300	
Sam, Galena ( 1006 @) R	ack (Upp	er)	County Washa C	
Location January				
Public Water System				
ID No For	Compliance	-0-10-10-10-10-10-10-10-10-10-10-10-10-1	THE SPACE FOR LAB USE ONLY	
Chlorine Residual No	for Compliance			
YOUR RETURN ADDRE		Invalid Sample	Please Repeat 🔾	
Name Michael Widmer	P	Received > 30 Hrs 🔾 Confluent Growth		
		Received > 20°C		
Address WCDWR	******************			
	***************			
TO ASSURE IDENTIFICAT	rion,			
PLEASE LABEL SPECIMEN BOTTLE WITH NAME ALSO.		Raw or Wastewater Analysis		
**	'	• •	, and the same of	
☐ Drinking Water Analysis		Methods:	a Filter	
Methods:			is turer	
☐ Membrane Filter ☐ MPN	!			
☐ Presence/Absence ☐ Other		Test Required	l: (Dilutions if Needed) RESULTS	
Results:	ENT ABSENT	Total Colifor	m 1: /100 n	
Total Coliform		Fecal Colifor	rm 1:	
E. Coli	ם נ	E Coli 1:	/100 F	
Date Tech	*4*********	Fecal Street	ococcus 1: >6. C /100	
		Enterococcu	is 1:	
The absence of coliforms meets Nevad	la State Health	Date 10-	25-01 Tech	
Division bacteriological standards for safe	drinking water.		(Rev	

\$ < 0.85 livestock

RSITY OF NEVA 1660 N. Reno.:	W01 275			
Sam, Michael Widmer Location Mid Galena Creek	2	Date 10/24	01 Hour 14	60
Location Mid Galena Creek			County Wasks	
Public Water System	,e	*****************		
ID No For C	ompliance	20 00 W 2 2 2 2 2 4 4 6 2 2 2 2 2 2 2 2 2 2 2 2	in the state of th	
Chlorine ResidualNot for	or Compliance	***************************************	THIS SPACE FOR	LAB USE ONLY
YOUR RETURN ADDRES	S	Invalid Sample	Please Repeat 🔾	
Name Michael Widmer			rs 🔾 Confluen	
MCり山R			eria 🖸 < 100 ml:	
	***************	> 200 Other pace		
PLEASE LABEL SPECIMEN BOTTLE		creek water, no dilution		
WITH NAME ALSO.		Raw or Wast	ewater Analysis	
Drinking Water Analysis		Methods:		
Methods:		☐ Membrane	- Filler	MPN
☐ Membrane Filter ☐ MPN				
☐ Presence/Absence ☐ Other	,		(Dilutions if Needed	
Results: rresen	T ABSENT	Total Coliforn	n l:	/100 ml.
E. Coli	٥	Coli 1		/100 mi
Date Tech	••••••	Recal Streptoc	occus 1:	100 mi
The absence of coliforms meets Nevada S	State Health inking water	Enterococcus  Date	1: Tech	/100 ml

<= = 0.64 livestock

ir V

W01 27585

NO1 27586

michael widmer	Date 101011 Hour 1430		
Sam, Michael Widmer Location Lower Galena 395	is a sube.		
Public Water System			
ID No For Compliance			
Chlorine Residual Not for Compliance	THIS SPACE FOR LAB USE ONLY		
YOUR RETURN ADDRESS	Invalid Sample Please Repeat		
Name Michael Widmer	Received > 30 Hrs Confluent Growth		
Address WC DW R	Received > 20°C		
Address	> 200 Other bacteria Other		
	California		
TO ASSURE IDENTIFICATION, PLEASE LABEL SPECIMEN BOTTLE	creek water, no dilution		
WITH NAME ALSO.	Raw or Wastewater Analysis		
☐ Drinking Water Analysis	Methods:		
Methods:	☐ Membrane Filter ☐ MPN		
☐ Membrane Filter ☐ MPN	Other		
☐ Presence/Absence ☐ Other	Test Required: (Dilutions if Needed) RESULTS		
Results: PRESENT ABSENT	Total Coliform 1:/100 ml.		
Total Coliform	Fecal Coliform 1:		
E. Coli	E. Coli 1:/100 ml.		
Date Tech	Feeal Streptococcus 1:		
9+201047	/100 mi		
The absence of coliforms meets Nevada State Health Division bacteriological standards for safe drinking water.	Date 10/25/C/1 Tech (Rev to		
WATER RAC	I TERIOLOGY		

5=1.5 gray area but close to himen

& BUDIST

Sam, Michael Widwer Location Dog Creeke Truckee Ri	Date 10,31/01 Hour 1120		
Location Loc Lyecke Truckee Ri	Ver county Washoe		
Public Water System			
ID No For Compliance	· · · · · · · · · · · · · · · · · · ·		
Chlorine Residual Not for Compliance	THIS SPACE FOR LAB USE ONLY		
YOUR RETURN ADDRESS	Invalid Sample Please Repeat		
Name bICLOIR_	Received > 30 Hrs 🖸 Confluent Growth		
	Received > 20°C 🖸 < 100 mls		
Address	> 200 Other bacteria Other		
TO ASSURE IDENTIFICATION, PLEASE LABEL SPECIMEN BOTTLE	Sediment		
WITH NAME ALSO.	Raw or Wastewater Analysis		
☐ Drinking Water Analysis	Methods:		
Methods:	☐ Membrane Filter ☐ MPN		
☐ Membrane Filter ☐ MPN	Other		
☐ Presence/Absence ☐ Other	Test Required: (Dilutions if Needed) RESULTS		
Results: PRESENT ABSENT	Total Coliform 1: /100 ml.		
Total Coliform	recal Coliform 1:/100 ml.		
E. Coli	F. Coli 1: /100 ml.		
Date Tech	Feral Streptococcos 1:/100 ml.		
	Enterococcus 1:/100 mi.		
The absence of coliforms meets Nevada State Health	Date 11-020 Tech JUASA		
Division bacteriological standards for safe drinking water.	(Rev. 1d.u7)		

WATER BACTERIOLOGY

£1 £ 0.09

A BUDISTE			W01 27678
MICHAEL	WIDN'EZ	Date 10/3	1/01 Hour 1030
ocation Hurter L.V	reeko Truckee	River	County Washe
Public Water System			
D No	For Compliance	********************************	
Thlorine Residual	Not for Compliant		THIS SPACE FOR LAB USE ONLY
YOUR RETUR	N ADDRESS	Invalid Sample	Please Repeat
Name WCDWR	**************************************	Received > 30	Hrs 🗋 Confluent Growth
			C 🔾 < 100 mls
Address	10-10-0-0-0-0-0-0-0-0-0-0-0-0-0-0-0-0-0		cteria 🔾 Other 🕽
TO ASSURE IDE PLEASE LABEL SP WITH NAM	NTIFICATION, ECIMEN BOTTLE	Greek w	voter, no. d. lufton
Drinking Water Analysis		Methods:	
Methods:		☐ Membran	e Filter
☐ Membrane Filter	☐ MPN	Other	***************************************
☐ Presence/Absence	☐ Other	Test Required	: (Dilutions if Needed) RESULTS
Results:	PRESENT ABSENT	Total Coliforn	m'l: /100 ml
Total Coliform			m):
E. Coli		E. Coli 1:	/100 ml
Date	Tech	Fecal Strepto	cocous 1:
		Enterococcus	1:
The absence of coliforms m	neets Nevada State Health	Date / / _ C	7-0/ Tech

 $\frac{2}{20} = 0.1$ 

RSITY OF NEVADA SCHOOL OF:  1660 N. Virginia Street Reno, Nevada 69503 PO 201042  Sam.  Location Idelwild  Public Water System  [D No For Compliance  Chlorine Residual Not for Compliance	Date 11/20/01 Hour 1830  County W45/48e  W01 28131  W01 28132
Name  M. Widwar  Name  4930 Energy Way  Rud 8950 Z  TO ASSURE IDENTIFICATION,  PLEASE LABEL SPECIMEN BOTTLE  WITH NAME ALSO.	Invalid Sample Please Repeat  Received > 30 Hrs
Methods:    Membrane Filter	Other
Division bacteriological standards for safe drinking water.	11-22-0/ (Rev. 10-47)

 $\frac{1:10}{30} = 0.08$ Sive stock

RSITY OF NEVADA SCHOOL OF MEDICINE 1660 N. Virginia Street

C1012 1UVV

Reno, Nevada 89503 W01 27676 A-BYOISS Date 10/31/01 Hour 10 00 Michael Widmer Location 9 lum Cr @ Truckee River Public Water System ... For Compliance .... THIS SPACE FOR LAB USE ONLY Not for Compliance .... Chlorine Residual YOUR RETURN ADDRESS Invalid Sample Please Repeat 🔾 Received > 30 Hrs ...... 3 Confluent Growth. MCDWR Received > 20°C ...... 3 < 100 mls ..... > 200 Other bacteria .... 🔾 Other ..... TO ASSURE IDENTIFICATION, Raw water, no dilution PLEASE LABEL SPECIMEN BOTTLE WITH NAME ALSO. Raw or Wastewater Analysis . ☐ Drinking Water Analysis Methods:

Methods:

☐ MPN ☐ Membrane Filter

☐ Presence/Absence

Total Coliform .....

Other .....

Results:

PRESENT

ABSENT 

E. Coli .....

The absence of coliforms meets Nevada State Health Division bacteriological standards for safe drinking water. ■ Membrane Filter

■ MPN

Other .....

Test Required: (Dilutions of Needed)

Total Coliform 1: \_ Pecal Coliforn 1:

E. Coli 1: \_ (Fecal Streptococcus 1:

Enterococcus 1: Date / - 02-0/ Tech 101

WATER BACTERIOLOGY

740 71

(estimate

RSITY OF NEVADA SCHOOL OF 1660 N. Virginia Street 1660 N. Virginia Street Reno, Nevada 89503 PO 201047  Sam, Fourth St. & McCarray  Occation Fourth St. & McCarray	
Fourth St. & McCarran	County Washoe
Public Water System	W01 28135
D No For Compliance	
Chlonne Residual Not for Compliance	TI WUI 20133
YOUR RETURN ADDRESS	Invalid Sample Please Repeat 🔾
Name M. Widner	Received > 30 Hrs Confluent Growth
Address 4930 Energy Way	Received > 20°C
Address	> 200 Other bacteria 2 3 Other Sediment 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2
Rew, 89502	Sediment Sediment
TO ASSURE IDENTIFICATION, PLEASE LABEL SPECIMEN BOTTLE	<u>≯</u> - 1
WITH NAME ALSO.	Raw or Wastewater Analysis
☐ Drinking Water Analysis	Methods:
Methods:	☐ Membrane Filter ☐ MPN
☐ Membrane Filter ☐ MPN	Other
☐ Presence/Absence ☐ Other	Test Required: (Dilutions if Needed) RESULTS
Results: PRESENT ABSENT	Total Coliform 1:/100 mi
Total Coliform	Fecal Coliform 1:
E. Coli	E. Coli 1:/100 ml
Date Tech	Fecal Streptococcus 1:
	Enterporoccus 1: /100 mi
The absence of coliforms meets Nevada State Health Division bacteriological standards for safe drinking water.	Date // - 2/- 0 / Tech 2017

clean.

AB40103 1660 N. Virginia Rano, Nevada 8	89503 DO	3201042		
Sam, Madow Lus Spaces		Date 11/20/01 Hour 945		
Location Shadow Lui Spaces	Bluck	County Waste		
Public Water System	***************************************	W01 28133		
ID No For Comp	•			
Chlorine Residual Not for Co	mphance			
YOUR RETURN ADDRESS		Invalid Sample Please Repeat		
Name Michael Widmer		Received > 30 Hrs Confluent Growth		
Address 4930 Energy Way	<u></u>	Received > 20°C		
Reno 189502				
TO ASSURE IDENTIFICATION, PLEASE LABEL SPECIMEN BOTTLE		Sediment To B		
WITH NAME ALSO.		Raw or Wastewater Analysis		
☐ Drinking Water Analysis		Methods: dilute 1至 年100		
Methods:		☐ Membrane File 55		
☐ Membrane Filter ☐ MPN		Other		
Presence/Absence Other	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	Test Required: (Dilutions if Needed) RESULTS		
Results:	ABSENT	Test Required: (Dilutions in Needled)  Otal Coliforn 1: 10 - 1:10 b - 300 5100 m		
Total Coliform		Fecal Coliforn 1: 10 5 1:100 6 40		
E. Coli	a.	E. Coli 1:		
Date Te: n		Fecal Streptococcus 1: /100 m		
		Enterococcus 1:/100 r		
The absence of coliforms meets Nevada State Division bacteriological standards for safe drinking	Health	Date 11-21-01 Tech 1011		

1.0		RSIT	Y ČI	NEVADA!	SCHOO	l of N	(ED)	CIL
$\sim$		1775		560 N. Virgi			<u> </u>	44
-1340	くら	200		Reno, Neva				
	• ~ `				_,	A	Q 40 1	

Sam, Michael Widmer Lower H. Truckee Drain	Date 11/15/01 Hour 11:00
Location Lower N. Truckee Drain  Public Water System	W01 28102
ID No For Compliance  Chlorine Residual Not for Compliance	
YOUR RETURN ADDRESS  Name Michael Widwar  Address WC Jui R  TO ASSURE IDENTIFICATION,	Invalid Sample Please Repeat  Received > 30 Hrs
PLEASE LABEL SPECIMEN BOTTLE WITH NAME ALSO.  Drinking Water Analysis Methods:	Methods: A.10+00 Methods: A.10+00 Membrane Fitter
☐ Membrane Filter ☐ MPN ☐ Presence/Absence ☐ Other	Test Required: (Dilutions of Needed) RESULTS
Total Coliform	Total Coliform 1:

1:10 150 = 0.5

livestock

Y OF NEVADA SCHOOL OF MEDICINE 1660 N. Virginia Street Reno, Nevada 89503

ABYOIS9 1660 N. Virginia Street Reno, Nevada 89503	
Sam, Michael Widmer	Date 11/15/01 Hour 1130
Location Marina	County Washoe
Public Water System	
ID No For Compliance  Chlorine Residual Not for Compliance	I 18/04/29101
YOUR RETURN ADDRESS	Invalid Sample Please Repeat
Name Michael Widmer	Received > 30 Hrs 🗀 Confluent Growth
Address WCDWR	Received > 20°C
TO ASSURE IDENTIFICATION, PLEASE LABEL SPECIMEN BOTTLE WITH NAME ALSO.	Raw or Wastewater Analysis Please
☐ Drinking Water Analysis	Methods: dilute Do and it 100
Methods:	□ Membrane Files NO MIN
☐ Membrane Filter ☐ MPN	Other
☐ Presence/Absence ☐ Other	Test Required: (Dilutions if Needed) RESULTS
Results:  Total Coliform	Total Coliform 1:
E. Coli	E. Coli 1: /100 m
Date Tech	E. Coli 1:
The absence of coliforms meets Nevada State Health Division bacteriological standards for safe drinking water.	Enterococcus 1:
WATER BAC	TERIOLOGY
1:10	1:100
1100 = 12.2	100 = 1

numan

A-240160

RSITY OF NEVADA SCHOOL OF MEDICINE 1660 N. Virginia Street Reno, Nevada 89503

Sam, Michael Wi Location Boynton			County Weshae
Public Water System	2.54 (2.54)	*******************************	W01 28096
ID No.	For Compliance		W01 28097
Chlorine Residual	Not for Complia	nce	
YOUR RETURN		Invalid Sample	Please Repeat
Name Michael W	idwar		Irs Confluent Growth
Address WCDWR		> 200 Other bac	teria NO T
TO ASSURE IDEN PLEASE LABEL SPEC WITH NAME	IMEN BOTTLE	Sediment	AUA AUA ADAMINIS
☐ Drinking Water Analysis		Methods: di	uteste and like
Methods:		☐ Membrani	Filter S MPN
☐ Membrane Filter ☐	MPN	☐ Other	***************************************
☐ Presence/Absence ☐	Other		(Dilutions if Needed) RESU
Results:  Total Coliform	a a	Total Coliforn  Pecal Coliforn  E. Coli 1:	n 1:
Date Te		Fotemcoccus	1:
The absence of coliforms med Division bacteriological standar	ds for safe drinking water	Date	8-0/
) 1:16	WATER B.	ACTERIOLOGY	
10 110	$\frac{\circ}{\circ}$ = 3.67	mi)	ked but => supt



## Alpha Analytical, Inc.

255 Glendale Ave. • Suite 21 • Sparks, Nevada 89431-5778 (775) 355-1044 • (775) 355-0406 FAX • 1-800-283-1183

#### **ANALYTICAL REPORT**

Sierra Environmental Monitoring

1135 Financial Blvd.

Reno, NV 89502

Job#:

Attn: John Seher

Phone: (775) 857-2400

Fax: (775) 857-2404

Total Petroleum Hydrocarbons - Extractable (TPH-E) EPA Method SW8015B/DHS LUFT Manual Total Petroleum Hydrocarbons - Purgeable (TPH-P) EPA Method SW8015B/DHS LUFT Manual

		Parameter	Concentration	Reporting Limit	Date Sampled	Date Analyzed
Client ID:	(S200111-0795) Lower	TPH-E (Jet Fuel)	ND	0.50 mg/L	. 11/15/01	
	Thomas	TPH-E (Diesel)	ND	0.50 mg/L	. 11/15/01	11/18/01
Lab ID:	SEM01111608-01A	TPH-E (Oil)	ND	0.50 mg/L	. 11/15/01	
•		TPH Purgeable	ND	0.50 mg/I	. 11/15/01	11/25/01
Client ID:	(S200111-0796) Lower N.	TPH-E (Jet Fuel)	ND	0. <b>50</b> mg/L	. 11/15/01	
	Truckee Drain	TPH-E (Diesel)	ND	0.50 mg/l	. 11/15/01	
Lab ID:	SEM01111608-02A	TPH-E (Oil)	ND	0.50 mg/l	11/15/01	
		TPH Purgeable	ND	0.50 mg/l	. 11/15/01	11/25/01
Client ID:	(S200111-0797) Marina	TPH-E (Jet Fuel)	ND	0.50 mg/I	. 11/15/01	
Lab ID :	SEM01111608-03A	TPH-E (Diesel)	ND	0.50 mg/l	. 11/15/01	
,		TPH-E (Oil)	ND	0.50 mg/I	. 11/15/01	11/18/01
		TPH Purgeable	ND	0.50 mg/I	. 11/15/01	11/25/01
Client ID:	(S200111-0798) Boynton	TPH-E (Jet Fuel)	ND	0.50 mg/l		
Lab ID:	SEM01111608-04A	TPH-E (Diesel)	ND	0.50 mg/l		
		TPH-E (Oil)	ND	0.50 mg/l		
ĺ		TPH Purgeable	ND	0.50 mg/l	. 11/15/01	11/25/01
Client ID:	(S200111-0799) Mid Thomas	TPH-E (Jet Fuel)	ND	0.50 mg/l	11/15/01	11/18/01
Lab ID :	SEM01111608-05A	TPH-E (Diesel)	ND	0.50 mg/l	11/15/01	11/18/01
		TPH-E (Oil)	ND	0.50 mg/l	11/15/01	
		TPH Purgeable	ND	0.50 mg/l	11/15/01	11/25/01

ND = Not Detected

R Scholl

KandgSadner

Walter Hinkows

Roger L. Scholl, Ph.D., Laboratory Director • • Randy Gardner, Laboratory Manager • • Walter Hinchman, Quality Assurance Officer Sacramento, CA • (916) 366-9089 / Las Vegas, NV • (702) 498-3312 / Wichita, KS • (316) 722-5890 / info@alpha-analytical.com

11/30/01 Report Date



### Alpha Analytical, Inc.

255 Glendale Ave. • Suite 21 • Sparks, Nevada 89431-5778 (775) 355-1044 • (775) 355-0406 FAX • 1-800-283-1183

#### **ANALYTICAL REPORT**

Washoe County Water Resources

4930 Energy Way

Reno, NV 89502

Mike Widmer

Attn: Phone:

(775) 954-4641

Fax:

(775) 954-4610

Job#:

Total Petroleum Hydrocarbons - Extractable (TPH-E) EPA Method SW8015B/DHS LUFT Manual

		Parameter	Concentratio	n	Reporting Limit	Date Sampled	Date Analyzed
Client ID:	N. Truckee Drain	TPH-E (Gasoline)	ND		0.50 mg/L	01/09/02	01/16/02
Lab ID:	WCW02010927-01A	TPH-E (Jet Fuel)	ND		0.50 mg/L	01/09/02	01/16/02
		TPH-E (Diesel)	ND		0.50 mg/L	01/09/02	01/16/02
		TPH-E (Oil)	0.71	*G	0.50 mg/L	01/09/02	01/16/02
		Surr: Nonane	85		%REC	01/09/02	01/16/02
Client ID:	Boynton Slough	TPH-E (Gasoline)	ND		0.50 mg/L	01/09/02	01/16/02
Lab ID:	WCW02010927-02A	TPH-E (Jet Fuel)	ND		0.50 mg/L	01/09/02	01/16/02
		TPH-E (Diesel)	ND		0.50 mg/L	01/09/02	01/16/02
		TPH-E (Oil)	0.85	*G	0.50 mg/L	01/09/02	01/16/02
		Surr: Nonane	103		%REC	01/09/02	01/16/02
Client ID:	Thomas Cr.	TPH-E (Gasoline)	ND		0.50 mg/L	01/09/02	01/16/02
Lab ID:	WCW02010927-03A	TPH-E (Jet Fuel)	ND		0.50 mg/L	01/09/02	01/16/02
		TPH-E (Diesel)	ND		0.50 mg/L	01/09/02	01/16/02
		TPH-E (Oil)	0.71	*G	0.50 mg/L	01/09/02	01/16/02
		Surr: Nonane	98		%REC	01/09/02	01/16/02
Client ID:	Evans Cr.	TPH-E (Gasoline)	ND		0.50 mg/L	01/09/02	01/16/02
Lab ID:	WCW02010927-04A	TPH-E (Jet Fuel)	ND		0.50 mg/L	01/09/02	01/16/02
		TPH-E (Diesel)	ND		0.50 mg/L	01/09/02	01/16/02
		TPH-E (Oil)	0.64	*G	0.50 mg/L	01/09/02	01/16/02
		Surr: Nonane	101		%REC	01/09/02	01/16/02

<sup>\*</sup>Note: Reported oil concentration may include some undifferentiated additional lighter-end hydrocarbons.

ND = Not Detected

Walter Hirihon

Roger L. Scholl, Ph.D., Laboratory Director • • Randy Gardner, Laboratory Manager • • Walter Hinchman, Quality Assurance Officer Sacramento, CA • (916) 366-9089 / Las Vegas, NV • (702) 498-3312 / Wichita, KS • (316) 722-5890 / info@alpha-analytical.com

ر 1/22/02 Report Date

G = Compounds outside the range of diesel have varying amounts of recovery.

#### TRIPLICATE EASE PRINT OR TYPE)

### **NEVADA STATE HEALTH LABORATORY** University of Nevada School of Medicine/385

Reno, Nevada 89557

(775) 688-1335

### 201042 ATER CHEMISTRY ANALYSIS:

Attn: Fees may apply to some types of samples.

All of the information below must be filled in or the analysis will not be performed.

YPE OF ANALYSIS:		02 JAN -	.9 PM 2: 13	State	' <b>/</b>	Co	unty Washo	د
YPE OF ANALYSIS:  Check here for ROUTIN Circle the constituents n	NE DOMESTIC AN ceded for PARTIAL	ALYSIS.	DA STATE LABORATOR	Township General Loc Source Add	cation Thom ress US 39	inge .k , a.S S	Cr Section	
AMPLING INSTRUCT		Ab C-					USE OF WATE	
The sample submitted must lace water samples should be				Loan	FOR ANALYSIS	<b>1</b>	Domestic drink	
pumped thoroughly before					l health reasons		Geothermal	5
east three times. Product wa			after running		e of the property		☐ Industrial or m	ining
for about ten (10) minutes.	الله المحادث	mo Coil	raes are see		r sale of property		☐ Irrigation	
ampled by	OUNTY D	ate 1/9/02	!	Subdivis	sion approval		Other	
Owner Porcy 111	30 PI	none7.591	7.000	Other.	2AW	•••••	Initials	***************************************
ampled by M. W. d. w. where Washace & Address Porsex 111 ity KENO	99571) St	ate NV		COLIDCE	OF WATER:			
,					Yes No		Туре	
REPORT TO:	1 0				Yes No		Name	
Name M. W.O	mej						Surface	
Address 4930	energy u	vay	••••••		Depth			
City Kero	EPORT TO: M. Widmer  Name 4930 Energy Way  City Reno  State NV Zip 39502						Casing depth	ft.
State/UV	Zi	ip		IN USE:	Yes No			
	The results belo	w are repres	sentative only of	f the sample	e submitted to this	labora	tory.	<u> </u>
	ORY USE ONLY				PRINT OTHER DESIRED CONSTITUENTS BELOW			
Constituent pp	m Constituent	ppm	Constituent	ppm	Constituent 152709	S.U.	Constituent	ppm
T.D.S. @ 149	Chloride		Iron		Color			
Hardness	Nitrate	0.3	Manganese		Turbitity			
Calcium	Alkalinity		Copper		pН			
Magnesium	Bicarbonate		Zinc					<del></del>
Sodium	Carbonate		Barium			<del> </del>		
Potassium	Fluoride			·		···		
Sulfate	Arsenic							
TKN O.6	TP	0.21						
TSS 84								
jee	•••••••••••••	Remarks	M	23/0	2			**********************
Collected by	••••••	pelineisu.	50 J.C. 1		••••••			****************
		Received	div.				*************************	
PWS LD. Personal Properties Conditions Conditions					rigeria.	RESUL	TS REPORTED	)
SDWA — Pri. Sec. Condition: [1] Broken				1 3546	·····			
- III	· · · · · · · · · · · · · · · · · · ·		· • • • • • • • • • • • • • • • • • • •		******************************		***************************************	
1st 2nd	3rd	Holding Ti	MATIK FILVE	S TO KAY		•••••	***************************************	
		Drosca	ed Correctly:					
Date Rec'd		]	ou ourselly.				***************************************	(Rev. 6/99)
ppm = parts per million, millign	rams per liter; S.U. = S	Standard Units						(1/64.0422)

IN TRIPLICATE (PLEASE PRINT OR TYPE)

#### NEVADA STATE HEALTH LABORATORY University of Nevada School of Medicine/385

152710

PO# 201042

Reno, Nevada 89557 (775) 688-1335

Α	TER CHEMISTRY ANALYSIS:				
tn:	Fees may apply to some types of samples.	02 JAN -9	PM	2:	13

All of the information below must be filled in or the analysis will not be performed.

			6.84	UMI J III		<b>'</b> √		wash	e .1
TYPE OF ANALYS	IS:	DOMESTIC ANA	ALVEIS LEET	NE VADA ST	A State	18 R	2ange	unty	n 6
Circle the constitue	ents need	ied for PARTIAL	ANALYSIS.		General Lox	cation <b>EVA</b>	SCR	**************************	***************************************
					Source Add	ress S. Uly	inica		
SAMPLING INSTR					~~ 4 CON	~~~	٦.	TICE OF WATE	
The sample submitted race water samples should					REASON  Loan	FOR ANALYSIS	<b>S</b> :	USE OF WATER:  Domestic drinking water	
be pumped thoroughly						l health reasons		Geothermal	ville ware
least three times. Produc	ct water	from filters should	d be sampled			e of the property		☐ Industrial or m	nining
for about ten (10) minut	ies.	·/ un	no Coll	Special property of the state of the state of	Rental o	r sale of property		☐ Irrigation	
Sampled by	スルセ	Dat	ie 1/4/07	· · · · · · · · · · · · · · · · · · ·	Subdivis	sion approval		Other	
Sampled by M. W. Owner Posca Address Posca City RENO	1113	Pho	)ne7.5	1.600	Other	A.A.		Initials	
City RENO	/	99570 Sta	ite NV			OF WATER:			•
						Yes No		Туре	
REPORT TO:	يا كينان					Yes No		Name	
Name	) N C	- 05- 1	14./		Spring	••••••		Surface	
Address	) <u> </u>	N=137	<u> yuy</u>	1		Depth		Casing diameter.  Casing depth	
Name	22		Cold Yes  No	•••••	Casing deput	IL			
31410,30-14-1		<del></del>		<del></del>		e submitted to thi	e lahora	torv.	
						Submittee to the		PRINT OTHE	R DESIRED
		FOR	LABORAT	ORY USE ONL	Y			CONSTITUE	
Constituent	ppm	Constituent	ppm	Constituent	ppm	Constituent 2710	S.U.	Constituent	ppm
T.D.S. @ 80° C.	212	Chloride		Iron		Color			
Hardness		Nitrate -N	0.5	Manganese		Turbitity			
Calcium		Alkalinity		Copper		рН	<del>-</del>	!	
Magnesium		Bicarbonate		Zinc					
Sodium		Carbonate		Barium					
Potassium		Fluoride		<u> </u>					
Sulfate	<del></del>	Arsenic				<u> </u>		ļ	
TKN 0	8	TP	0.16					4	
TSS 4	10_								<u> </u>
Fee	**************************************	••••••	Remarks	AC1	73/02				
Collected by			elvero.	THE PARTY NAMED IN	/		••••••		
			Received	Siv Maria			DECIII	TO DEDORTE	n
PWS I.D		***************************************				ing tigger to	いいの道でい	-1-3-FIST-W++ <b>-</b>	
SDWA Pri	S	Sec				Seg.		N. 2. 5. 2002	
lst 2nd		3rd	emp.:		eretorene manrimo			*************************	
	,			me UK: Yed Correctly:			***********	***************************************	******************
Date Rec'd		Init	· · · · · · · · · · · · · · · · · · ·	ed Consciy.		***************************************		***************************************	(Rev. 6/99

#### TRIPLICATE LEASE PRINT OR TYPE)

#### NEVADA STATE HEALTH LABORATORY University of Nevada School of Medicine/385 Reno, Nevada 89557

152708

201042

I LOA MOLO	J = 1 =		(77	5) 688-1	335				
VATER CHEMISTR'	Y ANALYSIS	: 0	ECE	Vel	)			low must be fille	
Attn: Fees may apply to some	types of samples.		🔊	~\! O.	12		T	ot be performed	
YPE OF ANALYSIS:  Check here for ROUTINE Circle the constituents nee		02.	JAN -9	Ph 2:	10 /	✓	C	washo	L
YPE OF ANALYSIS:	DOMESTIC ANA	17616 :	erun a A	STAT <b>i</b>	ownship	19	Range	Zo Section	n 21
Circle the constituents nee	ded for PARTIAL	ANALYSIS.	45 AM TO	MARON	eneral Loc	ation <b>Boy</b>	n ton	Slough	
		F than i	\$ \$4. \$ · · · · · · · · · · · · · · · · · ·	S	ource Add	ress M & (	Corrar	<u></u>	***************************************
SAMPLING INSTRUCTION	ONS:								
The sample submitted must be						FOR ANALY	SIS:	USE OF WATE	
ce water samples should be as pumped thoroughly before					Loan	1 lob		☐ Domestic drinl☐ Geothermal	king water
east three times. Product water	r from filters should	i be sampled	after runnii	ng r		health reasons of the property		Industrial or m	inine
for about ten (10) minutes.	in in	ie Coll				r sale of property	•	☐ Irrigation	8
ampled by M. WICK	Dat	e 1/9/02			3 Subdivis	ion approval		Other	
owner Mashoe Co	4655	. [	Other	2 <i>Ai</i> u		Initials	***************************************		
for about ten (10) minutes.  ampled by M. W. d. w. e.  wher Washes Co  Address Pors / 113  ity RENO	045-3			•	•	•		•	
ity RENO		te				OF WATER:			
DEDODT TO. · ·	EDODT TO					Yes No		Type Name	
Name M. Wid!	REPORT TO: W. Widmer  Name 4930 Energy Way  City Reno  State N.V. Zip 89502					Yes U No		Surface	
Address 4930 6	ineray u	) ay						Casing diameter.	
city Reno	<i>V 1</i>		····	. }				Casing depth	
State	Zip	895	2	. [		Yes 🗆 No		_	
	The results belov				a comple	submitted to	this labora	itory.	
	The results below	v are repres	CIIIALIVE	only or u	ic sample	, submitted to		·	
<b>B</b>	FOR	LABORAT	ORY USE	ONLY				PRINT OTHE CONSTITUEN	
	1	1	1			15270	8	<del></del>	
Constituent ppm	Constituent	ppm	Constituer	nt	ppm	Constituent	S.U.	Constituent	ppm
T.D.S. @ 240	Chloride		Iron			Color			
	- Su	4 0							
Hardness	Nitrate N	1.9	Mangane	ese		Turbitity			
Calcium	Alkalinity		Copper			pH		<u> </u>	
a Managadan	Bicarbonate		Zinc						
Magnesium	Bicarbonate	<del></del>	ZIIIC						
Sodium	Carbonate		Barium						
_		<del> </del>	<del> </del>						
Potassium	Fluoride								
								Į.	
Sulfate	Arsenic						<del></del>	4	
TKN In	178	0.27					ŀ		
100	<del></del>	15.5 6	-			<del> </del>	1.	1	
TSS 10H	<b>]</b>		ļ						
Fee		Remarks							••••
			41	112	3/62	<u> </u>			***************************************
Collected by	***************************************	125.55	· · · · · · · · · · · · · · · · · · ·	,					***********************
		Question of the	$\mathcal{J}$		# 10.04% *1.0		pceiii	TS REPORTE	<b>)</b>
PWS LD.				deli independenta Naci di Local	energia de la composición dela composición de la composición de la composición de la composición de la composición dela composición de la composición de la composición de la composición dela composición de la composición dela composición de la composición de la composición de la composición de la composición dela composición de la composición dela composición dela compo	ning <b>(1 ) (1 )</b>	UESUL	*13'17F1'WITPI	f
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SDWA — Pri	Sec	-		۰۰۰۰۰ اکٹھا الرب	jandar englishte	[va_j			
1st 2nd	. 3rd	GIFT D.:				***************************************			
		holding	me UK."	∐ Yəs	LIN	***************************************	•••••		
Date Rec'd	Init	Presen	red Corre	ctly:	ing our Colors	······································		•••••	
ppm = parts per million, milligra		andard Units							(Rev. 6/99)

IN TRIPLICATE (PLEASE PRINT OR TYPE) NEVADA STATE HEALTH LABORATORY. C E 1 152707 University of Nevada School of Medicine/385

Reno, Nevada 89557

JAN 2 8 2002

(Rev. 6/99)

Po# 201042

ppm = parts per million, milligrams per liter; S.U. = Standard Units

Attn:	Fees	may	apply	to	some	types	of	samples.	

100.	-	(775).68	88-1335	WARES OF P	N/51 18 . W		
WATER CHEMISTRY	Y ANALYSIS:		VEU	All of the informat			
Attn: Fees may apply to some t	types of samples.	02 1881 0	DM A :-	or the analysis	will no	ot be performed	<b>i.</b>
MAINE ON THE AMERICA		or han - A	rfi 2: 13 <sub>N</sub>	<b>'</b> √	<b>~</b> .	wash	oe 1
TYPE OF ANALYSIS:  Check here for ROUTINE	types of samples.  DOMESTIC ANALYSIS.  ded for PARTIAL ANALYSI	MA (15 15 5 )	State	19 n	COI	Cantin	n10
Circle the constituents need	DUMESTIC ANALYSIS.	REAL ALAB	Calabor	cation N. Truc	kec	Drain	w45 0004600000000000000
Choic dic consuments nee	ioi i UNITUD VINUDI 2		Source Add	Iress KIEPPE	LA		>*****************
SAMPLING INSTRUCTION	ONS:		Source Aut				
The sample submitted must be	representative of the source.		REASON	FOR ANALYSIS:	_	USE OF WATE	_
ace water samples should be as	free of dirt and debris as possi	ble. Wells should	Loan Loan		1	Domestic drin	king water
be pumped thoroughly before s				l health reasons		Geothermal	
east three times. Product water for about ten (10) minutes.	Time O. II	_		e of the property	_	Industrial or n	nining
Some and the M. W. AM.	W LIAI	2-		or sale of property		☐ Irrigation	1
Sampled by	Date 1/7/0	44655	☐ Subdivis	sion approval		Other	
Address POBOX 1113	O rnone1.3.		Uther.	RAW	********	uuais	********************************
Sampled by M. W. dw. & Owner Washoc Co Address Pobox 1113 City RENO	99520 State NV	***************************************	SUIDCE	OF WATER:			1
				Yes No		Туре	
REPORT TO:				Yes No		Name	
Name	~ ~ ~ ~ · · · · · · · · · · · · · · · ·	•••••	Spring			Surface	
Address 4930 E	nergy way	•••••	Well	Depth	ft.	-	
City Keno		₹ Ø 7	Hot Cold Casing depth				ft.
REPORT TO:  Name  Name  Address 4930 Energy Way  City Revo  State W.V. Zip 89502  Public Yes No Name							
The results below are representative only of the sample submitted to this laboratory.							
	FOR LABOR	ATORY USE ONL	Y	152707		PRINT OTHE CONSTITUE	,
Constituent ppm	Constituent pp	om Constituent	ppm	152707 Constituent	s.u.	Constituent	ppm
TDS @	·					, <u></u> ,	
180°C 12 312	Chloride	Iron		Color			
	N 0.9	. ] ,	<del></del>	T. 1:::		Ţ	
Hardness	Nitrate 1.8	Manganese		Turbitity		<b> </b>	<del> </del>
Calcium	Alkalinity	Copper		рН			
Culvidili	· ····································	Соррег		ļ <u></u>			<del>                                     </del>
Magnesium	Bicarbonate	Zinc		<u> </u>			
			· · · · · · · · · · · · · · · · · · ·				·
Sodium	Carbonate	Barium		ļ			<u> </u>
Datassium	Fluorido			1		Į.	(
Potassium	Fluoride	<del></del>		<del> </del>		<del> </del>	<del> </del>
Sulfate (3%)	Arsenic						
TKN 1.6	TP 0.3	6		1	į		
TSS 132	0.18	YC*	+	<del>                                     </del>		1	
132 136	<u> </u>		<u></u>			<del></del>	
Fee	Remark	:s	1 12.010		***********		
ξ». Callacted by			6-41-6-5/6-		•••••		
Collected by		a by:	water and the second second second	energy and the second	•••••••	***************************************	
PWS I.D	Receive	d By	2. (m) . (haileman)				
. 170 l.D	Ponditio	m: Fil Ometan	in Marian	912 <i>r</i> 4		***********************	)
SDWA — Pri S	Sec	П.Втокые		RE.	SULTS	REPORTED	*************************
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1st 2nd	3rdHoteling	ישיויייאור וואריייןייי	as The Kirt	••••••	JAN.	4.5 ZUUZ	******************
	1 Droe	<del></del>			••••••	*************************	*******************
Date Rec'd	Init.	erved Correctly:		······	••••••	***************************************	

JUN 18 2002

WASHOE COUNTY DEPT. OF WATER RESOURCES **Nevada State Health Laboratory** 

1660 N. Virginia St. Reno, Nevada 89503-1783

(775) 688-1335 FAX: (775) 688-1460

5/22/02 Received: 5/22/02 UNIVERSIT OF NEVADA SCHOOL OF MEDICINE

SAMPLE INFORMATION

Sample Type: SDWA

Township: 16 Range: 19

153979

Section: 4

Lab ID:

General Location: WASHOE VALLEY Source Address: FRANKTOWN UPSTREAM

Sampled:

REPORT TO

Name: ATTN MICHAEL WIDMER

Company: WASHOE COUNTY Address: 4930 ENERGY WAY

City: RENO

State: NV Zip: 89502 OWNER

Name: WASHOE COUNTY

Address: 4930 ENERGY WAY

City: RENO

State: NV Zip: 89502

The results below are representative only of the sample submitted to this laboratory.

co chira rab	oracory.		Results	Reporting
	Result	Reporting	in ppm	Limit
ROUTINE DOMESTIC	: in ppm	Limit	TRACE METALS:	
TDS @	-		Cadmium:	0.001
180 Deg. C:	65	10	Chromium:	0.001
Hardness:	17	N/A	Lead:	0.001
Calcium:	5	5	Mercury:	0.0005
Magnesium:	1	5	Selenium:	0.001
Sodium:	5	5	Silver:	0.001
Potassium:	1	5	Antimony:	0.001
Sulfate:	1 1 2	5 5 5	Beryllium:	0.001
Chloride:	2	5	Nickel:	0.001
Nitrate as N:	0.0	0.1	Thallium:	0.0005
Alkalinity:	24	10		
Bicarbonate:	29	N/A	OTHER:	
Carbonate:	0	N/A	MBAS:	0.1
Fluoride:	0.02	0.1	Nitrite-N:	0.01
Arsenic:	< 0.003	0.003	Cyanide:	0.005
Iron:	0.59	0.05	BOD:	2
Manganese:	0.01	0.02	COD:	10
Copper:	0.00	0.02	Kjeldahl-N:	0.1
Zinc:	0.01	0.05	Ortho-P:	0.01
Barium:	0.01	0.02	Total-P:	0.01
Boron:	0.0	0.1	Aluminum:	0.02
Silica:	22	1	Ammonia:	0.1
Color:	30 SU	3 SU		
Turbidity:	4.6 NTU	0.4 NTU	RADIOCHEMISTRY: pCi/l	pCi/l
pH:	7.58 SU	N/A	Gross Alpha:	3 3
EC:	55 SU	15 SU	Gross Beta:	3
SI @ 20 deg. C:	-1.79	N/A	Uranium:	
temp at time of	рн 20.6	_deg. C		,

ppm = parts per million, milligrams per liter

S.U. = Standard Units

Remarks: Trace metal reporting limits (excluding mercury) reflect undiluted sample, multiply reporting limit by \_\_\_\_ for this sample.

RESULTS REPORTED JUN 1 4 2002

Lab ID: 153980 Sampled: 5/22/02 Sample Type: SDWA Received: 5/22/02 UNIVERS

SAMPLE INFORMATION

Township: 17 Range: 19

Section: 34

General Location: WASHOE VALLEY

Source Address: OPHIR CREEK UPSTREAM

REPORT TO OWNER

Name: ATTN MIKE WIDMER

Company: WASHOE COUNTY

Address: 4930 ENERGY WAY

Address: 4930 ENERGY WAY City: RENO

City: RENO

State: NV Zip: 89502

The results below are representative only of the sample submitted to this laboratory.

	•		Results	Reporting
	Result	Reporting	in ppm	Limit
ROUTINE DOMESTIC:	in ppm	Limit	TRACE METALS:	
TDS @	,		Cadmium:	0.001
180 Deg. C:	61	10	Chromium:	0.001
Hardness:	19	N/A	Lead:	0.001
Calcium:	6	5	Mercury:	0.0005
Magnesium:	1	5 5 5 5 5	Selenium:	0.001
Sodium:	1 5 1	5	Silver:	0.001
Potassium:	1	5	Antimony:	0.001
Sulfate:	0	5	Beryllium:	0.001
Chloride:	5	5	Nickel:	0.001
Nitrate as N:	0.0	0.1	Thallium:	0.0005
Alkalinity:	22	10		
Bicarbonate:	27	N/A	OTHER:	
Carbonate:	0	N/A	MBAS:	0.1
Fluoride:	0.02	0.1	Nitrite-N:	0.01
Arsenic: <	< 0.003	0.003	Cyanide:	0.005
Iron:	0.26	0.05	BOD:	2
Manganese:	0.01	0.02	COD:	10
Copper:	0.00	0.02	Kjeldahl-N:	0.1
Zinc:	0.01	0.05	Ortho-P:	0.01
Barium:	0.01	0.02	Total-P:	0.01
Boron:	0.0	0.1	Aluminum:	0.02
Silica:	17	1	Ammonia:	0.1
Color:	15 SU	3 SU		
Turbidity:	2.2 NTU	0.4 NTU	RADIOCHEMISTRY: pCi/l	pCi/l
pH:	7.67 SU	N/A	Gross Alpha:	3
EC:	67 SU	15 SU	Gross Beta:	3
SI @ 20 deg. C:	-1.65	N/A	Uranium:	
temp at time of	pH 20.7	_deg. C		

ppm = parts per million, milligrams per liter

S.U. = Standard Units

Remarks: Trace metal reporting limits (excluding mercury) reflect undiluted sample, multiply reporting limit by for this sample.

K 6-13-02-

JUN 1 4 2002

Nevada State Health Laboratory

1660 N. Virginia St.

FAX: (775) 688-1460

(775) 688-1335

Reno, Nevada 89503-1783

OF NEVADA

SCHOOL OF MEDICINE

State: NV Zip: 89502

Lab ID: 153981 Sampled: 5/22/02 Sample Type: SDWA Received: 5/22/02 UNIVERSI

SAMPLE INFORMATION
Township: Range:

Section:

General Location: WASHOE VALLEY

Source Address: OPHIR DOWNSTREAM @ 395

OWNER

Name: WASHOE COUNTY
Address: 4930 ENERGY WAY

Nevada State Health Laboratory

1660 N. Virginia St.

FAX: (775) 688-1460

(775) 688-1335

Reno, Nevada 89503-1783

City: RENO

OF NEVADA

**SCHOOL OF MEDICINE** 

State: NV Zip: 89502

REPORT TO

Name: ATTN MIKE WIDMER Company: WASHOE COUNTY Address: 4930 ENERGY WAY

City: RENO

State: NV Zip: 89502

The results below are representative only of the sample submitted to this laboratory.

		•	Results	Reporting
	Result	Reporting	in ppm	Limit
ROUTINE DOMESTIC:	in ppm	Limit	TRACE METALS:	
TDS @	•		Cadmium:	0.001
180 Deg. C:	63	10	Chromium:	0.001
Hardness:	19	N/A	Lead:	0.001
Calcium:	6	5	Mercury:	0.0005
Magnesium:	1	5 5	Selenium:	0.001
Sodium:	5	5	Silver:	0.001
Potassium:	1	5 5 5	Antimony:	0.001
Sulfate:	0	5	Beryllium:	0.001
Chloride:	5	5	Nickel:	0.001
Nitrate as N:	0.0	0.1	Thallium:	0.0005
Alkalinity:	22	10		
Bicarbonate:	27	N/A	OTHER:	
Carbonate:	0	N/A	MBAS:	0.1
Fluoride:	0.02	0.1	Nitrite-N:	0.01
Arsenic: <	0.003	0.003	Cyanide:	0.005
Iron:	0.30	0.05	BOD:	2
Manganese:	0.01	0.02	COD:	10
Copper:	0.00	0.02	Kjeldahl-N:	0.1
Zinc:	0.01	0.05	Ortho-P:	0.01
Barium:	0.01	0.02	Total-P:	0.01
Boron:	0.0	0.1	Aluminum:	0.02
Silica:	17	1	Ammonia:	0.1
Color:	15 SU	3 SU		
Turbidity:	3.1 NTU	0.4 NTU	RADIOCHEMISTRY: pCi/l	pCi/l
pH:	7.67 SU	N/A	Gross Alpha:	3 3
EC:	67 SU	15 SU	Gross Beta:	3
SI @ 20 deg. C:	-1.65 ,	N/A	Uranium:	
temp at time of	рн 20.4	_deg. C		

ppm = parts per million, milligrams per liter

S.U. = Standard Units

Remarks: Trace metal reporting limits (excluding mercury) reflect undiluted sample, multiply reporting limit by \_\_\_\_ for this sample.

RESULTS REPORTED

JUN 1 4 2002

F 6-13-02

Lab ID: 153982 Sampled: 5/22/02 Sample Type: SDWA Received: 5/22/02 UNIVERSI

SAMPLE INFORMATION

Township: 16 Range: 19

Section: 28

State: NV

General Location: WASHOE VALLEY

Zip: 89502

Source Address: MUSKGROVE CREEK UPSTREAM

REPORT TO OWNER

Name: ATTN MIKE WIDMER Name: WASHOE COUNTY

Company: WASHOE COUNTY Address: 4930 ENERGY WAY

Address: 4930 ENERGY WAY City: RENO

City: RENO State: NV Zip: 89502

The results below are representative only of the sample submitted

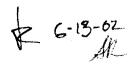
to this laboratory.

Results Reporting Limit Result Reporting in ppm ROUTINE DOMESTIC: in ppm TRACE METALS: Limit 0.001 TDS @ Cadmium: 180 Deg. C: 80 10 Chromium: 0.001 0.001 Hardness: N/A 31 Lead: Calcium: 9 0.0005 5 Mercury: Magnesium: 2 5 0.001 Selenium: Sodium: 7 5 Silver: 0.001 5 Potassium: 1 0.001 Antimony: Sulfate: 0 5 0.001 Beryllium: Chloride: 5 0.001 0 Nickel: Thallium: Nitrate as N: 0.1 0.1 0.0005 Alkalinity: 42 10 Bicarbonate: 51 N/AOTHER: Carbonate: 0.1 0 N/A MBAS: Fluoride: 0.04 Nitrite-N: 0.01 0.1 0.005 Arsenic: < 0.003 0.003 Cyanide: 2 Iron: 0.59 0.05 BOD: Manganese: 10 0.01 0.02 COD: Copper: 0.00 0.02 Kjeldahl-N: 0.1 Zinc: 0.01 0.01 0.05 Ortho-P: Barium: 0.01 0.02 Total-P: 0.01 Boron: 0.1 Aluminum: 0.02 0.0 Silica: Ammonia: 0.1 26 1 Color: 15 SU SU 3 Turbidity: 0.4 NTU RADIOCHEMISTRY: pCi/l pCi/l 4.0 NTU 3 :Hq 7.86 SU N/AGross Alpha: EC: Gross Beta: 3 84 SU 15 SU SI @ 20 deg. C: -1.02 N/A Uranium: temp at time of pH 20.5 deq. C

ppm = parts per million, milligrams per liter

S.U. = Standard Units

Remarks: Trace metal reporting limits (excluding mercury) reflect undiluted sample, multiply reporting limit by for this sample.



RESULTS REPORTED
JUN 1 4 2002

Nevada State Health Laboratory

1660 N. Virginia St.

FAX: (775) 688-1460

(775) 688-1335

Reno, Nevada 89503-1783

of Nevada

SCHOOL OF MEDICINE

Lab ID: 153983 Sampled: 5/22/02 Sample Type: SDWA Received: 5/22/02 UNIVERSI

SAMPLE INFORMATION

Township: 16 Range: 19

Name: ATTN MIKE WIDMER

Company: WASHOE COUNTY

Address: 4930 ENERGY WAY

Section: 23

REPORT TO

City: RENO

State: NV

General Location: WASHOE VALLEY

Zip: 89502

Source Address: MUSKGROVE CREEK DOWNSTREAM

OWNER

Name: WASHOE COUNTY

Address: 4930 ENERGY WAY

Nevada State Health Laboratory

1660 N. Virginia St.

FAX: (775) 688-1460

(775) 688-1335

Reno, Nevada 89503-1783

City: RENO

OF NEVADA

SCHOOL OF MEDICINE

State: NV Zip: 89502

The results below are representative only of the sample submitted to this laboratory.

to this lab	oratory.			
			Results	Reporting
	Result	Reporting	in ppm	Limit
ROUTINE DOMESTIC	: in ppm	Limit	TRACE METALS:	
TDS @			Cadmium:	0.001
180 Deg. C:	224	10	Chromium:	0.001
Hardness:	104	N/A	Lead:	0.001
Calcium:	30	5	Mercury:	0.0005
Magnesium:	7		Selenium:	0.001
Sodium:	27	5	Silver:	0.001
Potassium:	1	5	Antimony:	0.001
Sulfate:	12	5 5 5 5 5	Beryllium:	0.001
Chloride:	12	5	Nickel:	0.001
Nitrate as N:	0.0	0.1	Thallium:	0.0005
Alkalinity:	126	10		
Bicarbonate:	154	N/A	OTHER:	
Carbonate:	0	N/A	MBAS:	0.1
Fluoride:	0.29	0.1	Nitrite-N:	0.01
Arsenic:	< 0.003	0.003	Cyanide:	0.005
Iron:	0.38	0.05	BOD:	2
Manganese:	0.02	0.02	COD:	10
Copper:	0.00	0.02	Kjeldahl-N:	0.1
Zinc:	0.01	0.05	Ortho-P:	0.01
Barium:	0.06	0.02	Total-P:	0.01
Boron:	0.0	0.1	Aluminum:	0.02
Silica:	24	1	Ammonia:	0.1
Color:	30 SU	3 SU		
Turbidity:	5.4 NTU	0.4 NTU	RADIOCHEMISTRY: pCi/l	pCi/l
pH:	7.81 SU	N/A	Gross Alpha:	3
EC:	320 SU	15 SU	Gross Beta:	3
SI @ 20 deg. C:	-0.15	N/A	Uranium:	<del>-</del>
temp at time of		deg. C		
•	-			

ppm = parts per million, milligrams per liter

S.U. = Standard Units

Remarks: Trace metal reporting limits (excluding mercury) reflect undiluted sample, multiply reporting limit by \_\_\_\_ for this sample.

R 6-13-02

JUN 1 4 2002

(Rev. 10-97) </br> ..... /100 ml 3 /100 ml 100 ml THIS SPACE FOR LAB USE ONLY RESULTS O MPN County Mashit Test Required: (Dilutions if Needed) > 200 Other bacteria .... Date 5/22/22 Hour / Invalid Sample Please Repeat Raw or Wastewater Analysis Fecal Streptococcus 1: ☐ Membrane Filter Yotal Coliform 1: . Fecal Coliform 1:\_ Enterococcus 1: Other .... Æ. Coli 1: Sediment .. WATER BACTERIOLOGY **Methods**: NEVADA STATE HEALTH LABORATORY UNIVERSITY OF NEVADA SCHOOL OF MEDICINE Date... Not for Compliance ... For Compliance .... The absence of coliforms meets Nevada State Health Division bacteriological standards for safe drinking water. Location Franktown Upstream 1660 N. Virginia Street ABSENT PLEASE LABEL SPECIMEN BOTTLE TO ASSURE IDENTIFICATION, Address 4730 Erevey Way For NV 89502 YOUR RETURN ADDRESS PRESENT Name Michael Wichner Sampler Keith Weaver WITH NAME ALSO. Other ... D MPN Tech ☐ Drinking Water Analysis ☐ Presence/Absence Public Water System .... ☐ Membrane Filter Total Coliform ..... Chlorine Residual E. Coli .... Methods: Date ID No. Results:

	Date 5/22/12 Hour // 10 04)	County Mashie	***************************************	*	Not for Compliance THIS SPACE FOR LAB USE ONLY	Invalid Sample Please Repeat	Received > 30 Hrs 🗀 Confluent Growth	Received > 20°C	> 200 Other bacteria	Sediment	Akaw or Wastewater Analysis	Methods:	☐ Membrane Filter	□ Other	Test Required: (Dilutions if Needed) RESULTS			Fecal Streptococcus 1:	Enterococcus 1:  Date	—Ĕ
	Date 5/22/3 2 Hour 12 45 pm Ke. H. 1/4 14 81/	24 Lir Creek Upstr	of System	For Compliance	LAB USE ONLY sidual Not for Com	OUR RETURN ADDRESS	Srowth   Cherr   Widney	•	20518 NN	ASSURE IDENTIFICATION,	WITH NAME ALSO.	Water Analysis	MPN	tane Filter D MPN	RESULTS ce/Absence 🗖 Other	PRESENT	/100 ml		M. / 100 ml. // 100 ml. // 100 ml. // M. // // // // // // // // // // // // //	(Rev. 10-97) WATER
		ation Schip Creek The With Call and Same County Washit	lic Water System	For Compliance	Not for Compliance THIS SPACE FOR L.	RESS Invalid Sample Please Repeat	Mac. L. Confluent Growth		> 200 Other bacteria	ATION, Sequence Comment Commen	O. A Raw or Wastewater Analysis	Methods:	☐ Membrane Filter ☐ M	Other		0)	Yecal Coliform 1: (C)	Fecal Streptococcus 1:	Enterococcus 1: S - 2 3 - 2 Date Sech L	WATER BACTERIOLOGY
:	pler Keil Wealth	ation ' flit Creek La	lic Water System	Vo.	orine Residual	YOUR RETURN ADDRESS	ne Michael Widner	Iress 4930 Encry Wey	Rep. NV -67502	TO ASSURE IDENTIFICATION, PI FASE I AREL SPECIMEN BOTTLE	WITH NAME ALSO.	Inking Water Analysis	:poqs:	Membrane Filter	Presence/Absence 🗖 Other.		rtal Colitorm	e Tech Tech	: absence of coliforms meets Nevada State Health	0

NEVADA STATE HEALTH LABORATORY FOR	PRATORY = -		NEVADA STATE HEALTH LABORATORY	DRATORY -	
A 105891 Rene Newada 88503			1660 N. Virginia Street Reno. Nevada 89503		
MAY 2 8 2002	Y 2 8 2002 L			J ,	9 4 5
mpler Keith Woayer WASHOEGGED 5/22/2 Hour 3	SHOE GGE IS	MY SE	Pit Woover	Date 5/2	Date 5/2 / 3 Hour 194031
County Mask skale The WASTER WILL County Washide	WATER RESOURCE	, a	Muskaroux dostrenm		County Washie
ublic Water System			ystem	***************************************	
) No. For Compliance	***************************************		For Compliance		
hlorine Residual Not for Compliance		THIS SPACE FOR LAB USE ONLY   lual	ual Not for Compliance		THIS SPACE FOR LAB USE ONLY
YOUR RETURN ADDRESS	Invalid Sample Please Repeat		UR RETURN ADDRESS	Invalid Sample Please Repeat	ease Repeat
ame Michael Widner	Received > 30 Hr	Received > 30 Hrs 🗖 Confluent Growth	chael Widmer	Received > 30 Hrs	Received > 30 Hrs
ddress 4730 Er ev cf Wry	Received > 20°C	Received > 20°C 🗀 < 100 mls	120 Energy Way	Received > 20°C	
Fer NV 89502	> 200 Other bacte	_	- 2362 M	> 200 Other bacteria 🔲 Other	ia U_Other
TO ASSURE IDENTIFICATION, PLEASE LABEL SPECIMEN BOTTLE			SSURE IDENTIFICATION, LABEL SPECIMEN BOTTLE		
WITH NAME ALSO.	Raw or Wastewater Analysis		WITH NAME ALSO.	Raw or Wastewater Analysis	vater Analysis
Drinking Water Analysis	Methods:		ater Analysis	Methods:	
lethods:	☐ Membrane Filter	Filter D MPN		☐ Membrane Filter	ilter 🔘 MPN
☐ Membrane Filter ☐ MPN	Other	Oother	e Filter 🔲 MPN	Other	
☐ Presence/Absence ☐ Other	Test Required: (I	d) RESULTS	Absence Other	Test Required: (D	f Needed)
esuits: PRESENT ABSENT	YTotal Coliform 1: 10	1: 10 1/52/100 ml.	PRESENT ABSENT	Y Total Coliform 1:	01
	r Fecal Coliform 1:	1: 10 // 100 ml. m		Y Fecal Coliform 1:	1: 10 × 100 mil
E. Coli	7 E. Coli 1: _/O			у Е. Coli 1:	7001/ 7/00 1100 111
ateTechTech	Fecal Streptococcus 1:	ccus 1:/100 ml.	Tech Tech	Fecal Streptococcus 1:	cus 1:/100 mL
he absence of coliforms meets Nevada State Health	Enterococcus 1:	Enterococcus 1: 100 ml.	of coliforms meets Nevada State Health	Enterococcus 1:	7 Tech (LL)
livision bacteriological standards for safe drinking water.		(Rev. 10-97)	riological standards for safe drinking water.		(Rev. 10-97)
WATER BAC	WATER BACTERIOLOGY		WATER BACTERIOLOGY	TERIOLOGY	Petiting
		A CONTROL OF THE CONT	1000円を開発を受ける。 このできる こうしん こうしん こうしん こうしん こうしん こうしん こうしん こうしん		税,