

Emergency Action Plan Reid Gardner Generating Station Mesa Ponds M5 and M7

Prepared for
NV Energy

April 2017



Pond Name	National Inventory of Dam Number	Nevada State Identification Number
Mesa Pond M5	NV10779	J-652
Mesa Pond M7	NV10780	J-652

Document Control No. _____ of _____

Certification and Change Record

This section contains the written certification by a qualified professional engineer required by §257.73(a)(3)(iv) of the U.S. Environmental Protection Agency's Coal Combustion Residual Rule.



This Emergency Action Plan for Ponds M5 and M7, existing coal combustion residual surface impoundments at Reid Gardner Generating Station, meets the requirements of §257.73(a)(3) of the Coal Combustion Residual Rule.

Revision Date	Certified By	Revision	Description of Changes
April 14, 2017	Nathan Betts, PE /CH2M	0	Initial Plan
April 28, 2017	Nathan Betts, PE /CH2M	1	-Removed Initial Hazard Potential Classification Assessment from Appendix A, and re-lettered Appendixes -Added document control no. label on cover -Added revision number to footer

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Acronyms and Abbreviations

CCR	Coal Combustion Residual
EAP	Emergency Action Plan
EFPS	effluent forwarding pump station
FEMA	Federal Emergency Management Agency
HDPE	high-density polyethylene
I-15	Interstate 15
SR-168	State Road 168
Station	Reid Gardner Generating Station
US-93	U.S. Route 93

Summary of Emergency Action Plan Responsibilities

1.1 Purpose

A summary of emergency action plan (EAP) responsibilities during and before an emergency is provided in Tables 1-1 and 1-2. Responsibilities are described in greater detail in Section 5.

Table 1-1. Summary of EAP Emergency Responsibilities

Entity	Responsibilities
NV Energy	1. Detect and evaluate emergency conditions, and classify the emergency level (Section 5 and Table 5-1). 2. Follow Notification Flowchart (Section 2 and Figure 2-1). 3. Mitigate with corrective action. 4. Monitor the dam and provide timely status updates. 5. Terminate emergency when resolved. Prior to an Emergency 1. Disseminate EAP. Dissemination to local emergency responders is recommended. 2. Provide for EAP training. An annual frequency is recommended. 3. Perform periodic exercises under the EAP. An annual frequency for drills and testing is recommended. At a minimum, conduct a face-to-face meeting or exercise with local emergency responders. 4. At a minimum every 5 years, evaluate the EAP to ensure accuracy as required by the Coal Combustion Residual (CCR) Rule. Reviewing the EAP at least annually is recommended. 5. Update the EAP as necessary to keep it current, incorporate lessons learned from the exercises, and whenever there is a change in conditions that would substantially affect the EAP.
Clark County Emergency Dispatch (911)	1. Receive emergency call from NV Energy. 2. Notify and mobilize Clark County emergency responders. 3. Coordinate initial two-way communication with NV Energy for status reports.
Clark County Police, Fire and Rescue, and Emergency Services	1. Receive notification from Clark County Emergency Dispatch. 2. Establish communication and coordinate directly with NV Energy. 3. Receive status updates. 4. Notify the public within the inundation limits. 5. Evacuate within the inundation limits, if required. Implement own emergency response plan. 6. Assist NV Energy, as necessary.

Table 1-2. Summary of NV Energy Responsibilities by Position

Entity	Responsibilities
Control Room	1. Monitor effluent discharge. 2. Alert plant supervisor of emergency incidents.
Plant Supervisor	1. Determine emergency level. 2. Initiate notification procedures. 3. Establish clear means to rapidly identify the acting plant supervisor when the plant supervisor is not available during an emergency.
Station Security	4. Contact Clark County Emergency Dispatch (911). 5. Respond to suspicious persons.

Notification Flowchart and Procedure

The notification procedure is listed below and the flowchart shown on Figure 2-1 summarizes who is to be notified by whom, and in what priority, based on the three potential emergency levels.

2.1 Notification Procedure

1. **Emergency Level** – Correctly classify the emergency level to ensure proper notification and messaging. Emergency levels are defined here and described in more detail in Section 5 and Table 5-1.
 - **Imminent Failure:** Failure is imminent or has occurred. For example, rapidly increasing seepage erosion, overtopping or an embankment breach.
 - **Potential Failure:** A dam-failure condition may be slowly developing, but failure can be delayed or averted with a timely response; failure is not imminent. For example, a significant earthquake, acts of sabotage or terrorism, water surface elevation within 12 inches of the dam embankment crest, and failure of wastewater pipelines.
 - **Non-Failure:** Will not, by itself, lead to flooding. For example, water surface elevation above the maximum operational level, new seepage or leakage to monitor, security threats, or malfunction of a wastewater valve.
2. **Message** – Contact the personnel listed on the notification flowchart, Figure 2-1, in accordance with the emergency level. Contact using the applicable sample message listed in Section 2.1.1.
3. **Escalation** – If the emergency level escalates, immediately notify personnel required only for higher emergency levels, per the notification flowchart on Figure 2-1.
4. **De-escalation** – If the emergency level de-escalates, first provide an update to all previously contacted personnel, per the notification flowchart, before switching communications to personnel required only for lower-level emergencies.
5. **Emergency Termination** – See Section 5.5.

2.1.1 Sample Messages

2.1.1.1 Sample Message for Imminent Failure (to Emergency Response Agency)

My name is _____. I am the _____ at the NV Energy Reid Gardner Station in Moapa, Nevada. A dam at our Station called Mesa Ponds M5/M7 is failing [about to fail, or has failed]. I am initiating the Emergency Action Plan. This is NOT a drill or a test. This is a dam-failure emergency. We recommend that you initiate immediate warnings and evacuation along the Muddy River corridor between Reid Gardner Generating Station and downstream to Interstate Highway 15 (approximately 4.5 miles).

Please refer to your copy of the Emergency Action Plan to see sample inundation maps. If you do not have a copy of the EAP, we can provide one. I can provide details from those maps about locations where people may be at risk, and estimate potential flood-wave arrival times and depths. [Share information from EAP inundation maps.]

The problem at the dam is _____ [explain with a few simple words].

I can provide a status update in roughly _____ minutes at this number. If you have follow-up questions, please call _____ at _____ [give contact and number].

2.1.1.2 Sample Message for Potential Failure (to Emergency Response Agency)

My name is _____. I am the _____ at the NV Energy Reid Gardner Station in Moapa, Nevada. There is a serious situation here at one of our dams, but no immediate danger of a dam failure. I am initiating the Emergency Action Plan. This is NOT a drill or a test.

The problem at the dam is _____ [explain with a few simple words]. Please refer to your copy of the Emergency Action Plan to see sample inundation maps. If you do not have a copy of the EAP, we can provide one.

I will provide a status update when available. If you have follow-up questions, please call _____ at _____ [give contact and number].

2.1.1.3 Sample Message for Non-Failure Event (Internal only)

My name is _____. I am the _____ at the NV Energy Reid Gardner Station in Moapa, Nevada. There is an unusual condition at one of our dams, but no immediate danger of a dam failure. I am initiating the Emergency Action Plan. This is NOT a drill or a test.

The problem at the dam is _____ [explain with a few simple words]. Please refer to your copy of the Emergency Action Plan. If you do not have a copy of the EAP, we can provide one.

Statement of Purpose

3.1 Purpose

This Emergency Action Plan (EAP) defines responsibilities and provides procedures designed to identify unusual and unlikely conditions that may endanger NV Energy Mesa Ponds M5 or M7 at Reid Gardner Station (Station) in time to take actions to mitigate the problem and notify the appropriate emergency management officials of possible, impending, or actual failure of a pond. The EAP may also be used to provide notification when the potential for major flooding downstream of the facility is present. This EAP was written to meet the requirements of the Nevada Administrative Code 535.320¹ and Section 257.73 of the U.S. Environmental Protection Agency's Coal Combustion Residual (CCR) Rule.

The Mesa ponds are regulated as dams by the Nevada Division of Water Resources' Dam Safety Program (i.e., the State Engineer). The EAP provides for the following prior to, during and after a dam emergency:

- **Responsibilities** for preparedness, emergency action and post-emergency assessment
- **Notification flowcharts** for emergency communication/coordination
- **Project description** containing a site description and key information about the dam
- **EAP response process** (detect, evaluate, notify, mitigate, terminate, follow-up)
- **Preparedness** prior to an emergency
- **Inundation maps** to illustrate potential dam-failure inundation limits
- **Supplemental materials** that may be useful prior to or during an emergency

The general objective is to reduce the risk of death, injury, property damage, ecological damage and contamination due to flooding or an unlikely dam-failure emergency.

3.2 Scope

With careful planning and proper training prior to an emergency, loss of life, property damage and economic and environmental impacts can be reduced. The intent of this EAP is to train and assist employees in the appropriate preparation and response to a flooding or dam-safety emergency at Ponds M5 and M7. As such, it does not cover other facilities, nor does it directly cover related safety topics, such as site security, public access and safety, and response to medical emergencies. The EAP is an important training tool and plan for unusual and emergency dam conditions, and applies to all Station personnel, contractors and others who may be on-site or have responsibilities during an emergency situation.

¹ Nevada Administrative Code 535.320 refers to *FEMA 64*, which presents the Federal Emergency Management Agency's (FEMA) standardized guidelines and template for EAPs for dams. The full title for FEMA 64 is *Federal Guidelines for Dam Safety, Emergency Action Planning for Dams* (July 2013).

Project Description

4.1 Location of Mesa Ponds

The Mesa Ponds M5 and M7 are located within the southwest quarter and southeast quarter of Section 8, respectively. The facility is in Township 15 South, Range 66 East, Mount Diablo Baseline and Meridian in Clark County, Nevada. The latitude and longitude of the ponds are 36° 38'32" N and 114° 37'50" W.

Reid Gardner Generating Station is approximately 45 miles northeast of Las Vegas within the Moapa Valley, a large and relatively flat-bottomed valley occupied by the Muddy River, a spring-fed perennial stream. The river bisects the NV Energy property in a northwest to southeast orientation. Ponds M5 and M7 are on a mesa overlooking the valley. The latitude and longitude of the plant area is 36° 39'22" N and 114° 38'03" W. Figure 4-1 shows the location and vicinity of the Station and the Mesa Ponds.

4.2 Pond Information Summary

Table 4-1 presents the design information summary for the Mesa Ponds M5 and M7. The pond information was taken from the record drawings for the Mesa Evaporation Ponds (Appendix B). Figure 4-2 shows the facility features and storage curves of the Mesa Ponds. The ponds are lined with two layers of high-density polyethylene (HDPE) geomembrane with an interstitial leak detection and collection system.

Table 4-1. Location and Design Information Summary

Name of Dam: Mesa Pond M5		
State: Nevada	County: Clark	Jurisdiction: Clark County
National ID: NV10779	State ID: J-652 (for M5 and M7)	HAZARD RATINGS: High (per CCR Rule) Significant (per State Permit)
Type of Embankment (Earthfill, Concrete, etc.): Earthfill		
Top of Embankment Elevation: 1,720.0 feet	Height of embankment: 23 feet	
Length of embankment: 1,360 feet	Thickness at top: 20 feet	Thickness at bottom: 160 feet
Operational Water Surface Elevation: 1,715.7 feet	Freeboard: 4.3 feet	Maximum Storage: 260 acre-feet
Name of Dam: Mesa Pond M7		
State: Nevada	County: Clark	Jurisdiction: Clark County
National ID: NV10780	State ID: J-652 (for M5 and M7)	HAZARD RATINGS: High (per CCR Rule) Significant (per State Permit)
Type of Embankment (Earthfill, Concrete, etc.): Earthfill		
Top of Embankment Elevation: 1,723.0 feet	Height of embankment: 23 feet	
Length of embankment: 920 feet	Thickness at top: 20 feet	Thickness at bottom: 130 feet
Operational Water Surface Elevation: 1,718.7 feet	Freeboard: 4.3 feet	Maximum Storage: 265 acre-feet

Table 4-1. Location and Design Information Summary

Name of Dam: Mesa Ponds M5 and M7	
Location of Embankments: (Township, Range, Section): T 15S, R 66E, Section 8	
Name of Stream or Drainage:	Not Applicable – The dams are designed to prevent inflow from drainages.
Access Route:	Primary Route: From Interstate 15 (I-15), take Exit 88. Head north on Hidden Valley Road for approximately 2.5 miles. Turn left onto Wally Kay Way and travel for approximately 1 mile to Reid Gardner Generating Station. Meet up with NV Energy personnel at the security gate. Alternate Route: From I-15, take Exit 64 and head north onto U.S. Route 93 (US-93). Turn right to head east on State Road 168 (SR-168) at Coyote Springs. Travel on SR-168 for approximately 21 miles. Turn right onto Hidden Valley Road and travel for approximately 1 mile to Wally Kay Way. Take a right onto Wally Kay Way and continue to the Station. Meet up with NV Energy personnel at the security gate.

4.3 Pond Piping and Operation

The Mesa Ponds are used to evaporate process wastewater from the Station's power generation plant. One underground 8-inch diameter HDPE effluent discharge pipeline runs from the effluent forwarding pump station (EFPS) to the Mesa Ponds. The pipeline was pressure tested for 150 to 300 pounds per square inch and typically operates in the 110 to 120 pounds per square inch range. The pipeline terminates at a valve station, located at the northwest corner of Pond M7 (Figure 4-2).

The valve station located at the northwest corner of Pond M7 (Figure 4-2) routes flow into one of three underground pipes for discharge into the ponds. These discharge pipes are made of the same material as the pipeline. One pipe discharges into Pond M7, one into Pond M5, and the third is capped and does not discharge. This third pipe was installed for a third proposed mesa pond that has not been built. The pipes discharging into Ponds M4 and M7 are open-ended, to reduce the pressure of the water in pipes buried in the embankments. Damage or rupture of the effluent pipes, valve station or cleanout (pigging) stations could result in uncontrolled discharge into the ponds, overtopping of the embankments and eventual discharge of wastewater to the Muddy River and downstream.

Within the ponds, HDPE markers are welded to the HDPE geomembranes to mark the maximum operational water level, and staff gauges are installed on one bridge in each pond. These markers and gauges are visually inspected to check for overtopping. In addition, the flow from the EFPS is monitored by operations personnel. The maximum operational water levels for Ponds M5 and M7 are 1,715.70 and 1,718.70 feet above mean sea level, respectively (Figure 4-2). Vertical datum is the North American Vertical Datum of 1988.

4.4 Geotechnical Information

The earthen pond embankments were designed and constructed as a balanced cut and fill with no embankment zoning. The geotechnical evaluation of the site was performed by Converse Consultants and detailed earthwork specifications were developed by CH2M HILL Engineers, Inc (CH2M). The Converse Geotechnical Report describes the native soil as "predominantly silty to poorly graded sands that were occasionally partially cemented to cemented, intermingled with lean and fat clays and poorly graded gravel." The native soil was excavated then processed to produce earthfill by removing deleterious material and particles larger than 4 inches in diameter.

The embankments were constructed by excavating and placing the native soil with scrapers, spreading the soil into lifts using graders, removing deleterious material with graders or by hand, moisture conditioning

and then compacting with loaded scrapers. The embankment soil was compacted to a minimum dry unit weight corresponding to 95 percent of the maximum dry unit weight determined in the laboratory by ASTM International Test Method 1557.

4.5 Description of Downstream Area

The area downstream of the Mesa Ponds is rural and includes the Muddy River, a few residences, barns, hay fields and cow pastures. Flow from a theoretical Ponds M5 or M7 dam breach would travel down steep cliffs and could make its way to the Muddy River approximately 4,000 feet from the ponds, and then flow generally along the Muddy River and its floodplain. Based on analysis, one of the downstream residences (a manufactured home) is inside the modeled inundation area. The analysis is found in the “Initial Hazard Potential Classification Assessment, Ponds M5 and M7, Reid Gardner Generating Station”, created by CH2M and dated October 11, 2016.

EAP Response Process

5.1 Response Process Overview

The EAP uses a four-step process:

- Step 1: Detect, evaluate and classify an incident or emergency (Section 5.2.1).
- Step 2: Notify and communicate (Section 2).
- Step 3: Take emergency action (Sections 5, 6 and 7).
- Step 4: Terminate and follow-up (including documentation).

5.2 Step 1: Emergency Detection, Evaluation and Classification

5.2.1 Detection

Detection of an unusual or emergency condition at the dams may be initiated by direct staff observation or by staff tracking monitoring equipment triggers. In terms of staffing, Station personnel are present on-site 7 days a week from 6 a.m. to 6 p.m. Security personnel are present outside of those working hours. Monday through Friday, the Station Personnel observe the Mesa Ponds at least daily. Station personnel visit the ponds and check the staff gauges, HDPE liner markers and pipelines typically a minimum of 4 days per week, usually during daytime hours. In terms of monitoring, the embankments are equipped with an interstitial leak detection and collection system (HDPE geonet). The water surface elevation is monitored and maintained at or below its maximum operational level 4.3 feet below the top of embankment. In addition, the flow of water from the EFPS to the ponds is displayed in the control room. Because the site is staffed continuously, personnel are present who could detect an emergency related to the ponds.

If an emergency is detected, use guidance in this section to evaluate conditions at the dam and classify the emergency as one of three levels: **Imminent Failure**, **Potential Failure**, or **Non-Failure** (Section 5.5).

5.2.2 Evaluation and Classification

During an emergency associated with the ponds at the Station, it is important to correctly evaluate and classify the conditions for accurate communication using the notification procedure. The three emergency classifications at the facility are described below and in Table 5-1.

Imminent Failure

Failure is imminent or has already occurred. Due to lack of time or mitigation options, immediate downstream evacuation is warranted. Examples are listed below and in Table 5-1.

- Rapid inflow to a pond cannot be controlled and will cause overtopping of the embankment. Resulting failure is likely.
- Uncontrolled seepage through, under or around the embankment is removing embankment material at an accelerating pace. Stop-gap granular fill cannot be placed in time to stop progressive internal erosion. Uncontrolled release of the reservoir is projected.

5.2.2.2 Potential Failure

Conditions are developing that could progress to a dam failure, but time is available for analyses, decisions and mitigating actions before the dam could fail. Although a failure may occur, predetermined actions may prevent or moderate failure. Examples are listed below and in Table 5-1.

- Rising reservoir levels may yet be diverted.
- Transverse cracking of the embankment (from earthquake or incipient slope movement).
- A verified threat to use explosives to damage the dam.
- Seepage is slowly eroding the embankment toe and staff are mobilizing to place granular fill at the point of discharge, or have already placed inadequate fill.

5.2.2.3 Non-Failure

An unusual event at a dam that will not, by itself, lead to dam failure, but requires internal or external notifications. External notifications are only required if there is an immediate threat to the public. Examples are listed below and in Table 5-1.

- Water surface elevation is above maximum operational level. The maximum operational water levels for Ponds M5 and M7 are 1,715.70 and 1,718.70 feet above mean sea level, respectively (Figure 4-2). Vertical datum is the North American Vertical Datum of 1988 (i.e., NAVD 88).
- New seepage or leakage through the dam requires increased monitoring and assessment.
- Unauthorized persons appear to be watching or surveilling the dam.
- Malfunction of water conveyance infrastructure.

5.3 Step 2: Notification and Communication

Use the notification flowchart and procedure in Section 2. As indicated in Section 2, the people notified and the message delivered depend on the emergency level (Table 5-1). While the EAP notification flowchart must be updated whenever personnel or contact information changes, a current Emergency Response Phone List must also be posted in the Control Room and security office.

5.3.1.1 Imminent Failure (or has already occurred)

If failure of the dam is imminent, the priority is to immediately initiate evacuations downstream of the dams. Engage notified dam-safety experts to complete dam evaluation and emergency classification in parallel, while notifications are completed. Update notifications when status is better understood.

5.3.1.2 Potential Failure

If a potential dam-safety emergency is detected early, there may be time to evaluate and mitigate concerns prior to completing *all* external notifications. Immediately engage notified dam-safety experts to allow for better evaluation, classification and appropriate action to avert failure or mitigate impacts, and to alert key supervisors and emergency responders to facilitate emergency preparation and coordination.

5.3.1.3 Non-Failure

If an unusual, non-failure condition is discovered at a dam, focus on engaging internal experts for evaluation, monitoring and response; or law enforcement if there is a security concern.

Table 5-1. Emergency Level Determination Guidance

Risk	Emergency Level Determination Guidance	Emergency Level		
		Non-Failure	Potential Failure	Imminent Failure
Flooding	Not considered a likely event for Pond M5 and M7 because far from waterways			
Erosion	Southwest stormwater berm has eroded and the ponds are receiving offsite inflow	●		
Overtopping of top of dam	Water level is above maximum operational level, but more than 12 inches below dam embankment crest	●		
	Water level within 12 inches of dam embankment crest		●	
	Erosion of dam embankment crest by large overtopping waves			●
	Water level at or nearly at top of dam; water overtopping top of dam, with or without erosion			●
Seepage	New seepage area on or near the dam	●		
	New seepage area with cloudy discharge or increasing flow rate		●	
	Rapid flow rate increase with cloudy discharge from an existing seepage area			●
	New, small sand boil, whirlpool, rapid settlement, or sinkhole	●		
	Enlarging sand boil, whirlpool, settlement, or sinkhole – imminent failure if rapid		●	●
Sinkholes	Observation of new sinkhole in pond area or on embankment	●		
	Rapidly enlarging sinkhole		●	●
Embankment cracking	New cracks in the embankment, greater than 0.25 inch wide, without seepage	●		
	Cracks in the embankment with seepage		●	
Embankment movement	Evidence of embankment slope movement (sliding, slumping, rotation, settlement)	●		
	Sudden or rapidly progressing slides of the embankment slopes			●
Earthquake	Earthquake felt at dam or earthquake with Magnitude ≥ 4.0 reported within 30 miles	●		
	Earthquake resulting in visible damage to the dam or appurtenances		●	
	Earthquake resulting in uncontrolled release of water from the dam			●
Piping	Conveyance piping is inoperable or leaking	●		
	Damaged piping produces uncontrolled release of water into or from reservoir	●	●	
Security threat	Demonstration or public protest that raises security threat levels for dam	●		
	Verified bomb threat that, if carried out, could result in damage to the dam		●	
	Detonated bomb that has resulted in damage to the dam or appurtenances			●
Sabotage/ vandalism	Damage to the dam or appurtenances with no impact to dam function	●		
	Modification of dam or appurtenances that could adversely impact dam function	●		
	Damage to dam or appurtenances that has resulted in seepage flow		●	
	Damage to dam or appurtenances that has resulted in uncontrolled water release			●

5.4 Step 3: Emergency Actions

In parallel or subsequent to initial notifications, NV Energy must take action to prevent or delay a dam failure, and to mitigate its impacts if failure cannot be avoided. While a dam-failure emergency is unfolding, NV Energy is responsible for monitoring conditions at the dam and providing timely status updates internally and to external emergency responders, using the appropriate notification flowchart(s).

Pre-planned actions to some dam-safety emergencies are summarized in Tables 5-2 through 5-4. Responsibilities of specific personnel are described in Section 6. Pre-planned steps to be prepared are described in Section 7.

Table 5-2. Emergency Operations and Repair Actions for Imminent Failure Conditions

Indicators Requiring Action:	Mitigation and Control Actions to be taken:
Embankment or structural integrity appears to be uncontrollably deteriorating or a breach in the dam has occurred.	Follow notification and evacuation procedures outlined in Section 2 this EAP. Inspect and clear evacuation routes on and from the Station. Place traffic control devices to barricade entry into anticipated flood areas on the Station. Post site monitors where they can safely observe and monitor the dam. Monitors should not be stationed on the dam or within the projected dam-failure floodplain. If additional site monitors are available and can be placed on high ground, consider providing assistance to emergency responders by observing predicted areas of inundation (from a safe distance) to monitor flow, debris buildup and damage conditions. Initiate emergency evacuation of the downstream floodplain area indicated by corresponding inundation maps by notifying emergency responders via the notification flowchart in Section 2. Initiate evacuation of the Station if any portions are in the downstream floodplain area indicated by inundation maps. If time is available, place sandbags, concrete barriers, earthen dikes, or other protective devices on Station property to confine flows to the open spaces and divert flow around Station property where possible.

Table 5-3. Emergency Operations and Repair Actions for Potential Failure Conditions

Indicators Requiring Action:	Mitigation and Control Actions to be Taken:
The water surface elevation is within 12 inches of the dam embankment crest.	Observer will notify the Control Room to monitor effluent discharge and check water level in the EFPS. Plant supervisor will begin notification procedures in Section 2 of this EAP. Plant supervisor will direct Station personnel to stop discharging effluent to the pond with the developing emergency condition. Depending on water level in the EFPS, the plant supervisor will direct Station personnel to transfer water from pond with developing emergency condition to the other pond. If water levels in the pond(s) reach the dam embankment crest or begin overtopping, proceed to <i>Table 5-2</i>.
Verified bomb threat to Mesa Ponds embankment.	Observer will notify Reid Gardner Generating Station Security and Control Room. Plant supervisor will begin notification procedures in Section 2 of this EAP.

Table 5-3. Emergency Operations and Repair Actions for Potential Failure Conditions

Indicators Requiring Action:	Mitigation and Control Actions to be Taken:
Transverse cracking of embankment (from earthquake or incident slope movement)	Observer will notify Control Room. Plant supervisor will begin notification procedures in Section 2 of this EAP. Notify operations manager or their dam safety engineer to develop recommendations for buttressing or other strengthening measures. Repair operations should only be undertaken if the embankment is deemed stable enough to support such activities. If repair operations are not successful, or cannot be performed proceed to <i>Table 5-2</i>.
Seepage is slowly eroding embankment and Station personnel have not started placing granular fill at the point of discharge, or have not placed adequate fill.	Begin or continue repair operations only if embankment is deemed stable enough to support such activities. Plant supervisor will begin notification procedures in Section 2 of this EAP. If repair operations are not successful, or cannot be performed, proceed to <i>Table 5-2</i>.

Table 5-4. Emergency Operations and Repair Actions for Non-Failure Conditions

Indicators Requiring Action:	Mitigation and Control Actions to be Taken:
New seepage detected in embankment.	Observer will notify Control Room to monitor seepage detection. Plant supervisor will begin notification procedures in Section 2 of this EAP. Plant supervisor will designate a site monitor and send them to monitor the Mesa Ponds. Site monitor will look for seepage in the embankment, and communicate with the plant supervisor. If seepage is detected, arrange for notified dam-safety experts to observe site.
Unauthorized persons appear to be surveilling or watching the dam.	Observer will notify Reid Gardner Generating Station Security and Control Room of possible trespassers at the Mesa Ponds. Plant supervisor will begin notification procedures in Section 2 of this EAP. Observer will not approach person(s) on their own.
Damage or rupture of the effluent discharge pipes or valve station that results in a uncontrolled discharge of water into the ponds.	Observer will notify Control Room to monitor effluent discharge pipes. Plant supervisor will begin notification procedures in Section 2 of this EAP. Plant supervisor will direct Station personnel to stop discharging effluent to the pond with the developing emergency condition.
Water surface elevation is above maximum operation level in either pond, but more than 12 inches below the dam embankment crest.	Observer will notify the Control Room to monitor effluent discharge and check water level in the EFPS. Plant supervisor will begin notification procedures in Section 2 of this EAP. Plant supervisor will direct Station personnel to stop discharging effluent to the pond with the developing emergency condition. Plant supervisor may direct Station personnel to transfer water from pond with developing emergency condition to the other pond.

5.5 Step 4: Termination and Follow-up (Including Documentation)

Reid Gardner Generating Station is responsible for initiating the EAP and deciding when the emergency has passed and activation of the EAP is officially terminated. Termination must be communicated to all previously-contacted parties using the same notification flowchart in Section 2. After termination, it is recommended to follow-up EAP activations with post-event documentation and to also to conduct supplemental evaluation of the EAP for its effectiveness and recommended improvements. The EAP evaluation can best be conducted in a post-event evaluation workshop to solicit input from those who were involved in the EAP activation, including those from external emergency responders.

Form templates are provided in Appendix C to document EAP activations. Complete these forms prior to terminating the EAP and as part of follow-up. The forms are:

- Emergency Response Event Log – used to document a timeline of events, actions and communications taken during the emergency.
- Dam Emergency Termination Log – used to assess damage to the dam, Station, and downstream and justify termination of the dam-safety emergency.
- It is recommended that the post-event EAP evaluation can be documented in a brief report documenting when and where the workshop was held, who participated, what the workshop outcomes were, who will update the EAP and when updates to the EAP will be completed. The report should be attached to future revisions of the EAP in a new appendix.

Responsibilities under the EAP

6.1 General Responsibilities

The EAP is a structured plan to help ensure appropriate emergency response. That plan includes preparedness (Section 7), pre-planned notifications (Section 2) and pre-planned actions (Section 5). Effective use of the EAP requires prior training and fulfillment of planned responsibilities. EAP responsibilities can be broadly described as follows. Assigned responsibilities by title, described in the subsections that follow, help ensure these broad responsibilities are fulfilled.

- Owner
 - Employ an EAP coordinator who will ensure all requirements in the EAP (including preparedness, training and follow-up) are performed as required in the EAP
 - Provide for annual training and exercises (internal and external), to include holding an annual face-to-face meeting or exercise between local emergency responders as required by the CCR Rule
 - Update and improve the EAP
 - Surveillance and monitoring
 - Detecting an incident and activating the EAP
 - Evaluating and classifying an incident. Ensure dam-safety experts are available (either on staff or have informed consultants available)
 - Notifying emergency management authorities
 - Provide inundation maps and summarize downstream impacts
 - Provide supplemental (appended) information
 - Performing pre-planned response actions
 - Coordinate in advance any warnings or evacuations to be performed by owner
 - Monitor an incident and provide for staff safety and security
 - Termination an activated EAP and follow-up
- Emergency Management Authorities
 - Issue public warnings
 - Perform any evacuations
 - Coordinate multiple emergency management agencies and their staff
- Dam-Safety Agencies
 - Provide technical support
 - Help with post-event assessment and information

6.2 Owner Responsibilities

The specific actions NV Energy personnel should take after implementing the EAP notification procedures are described below. When time permits, supervisory personnel should be consulted before any response

actions are taken. Advice may be needed concerning predetermined remedial action to delay, moderate, or alleviate the severity of the emergency condition.

6.2.1 Notifications

Notification responsibilities and lines of communication are illustrated on the notification flowcharts in Section 2. If a link in the chain of communication is unavailable or unable to perform, the incident commander will assign an alternative person to fill that role.

6.2.2 Incident Commander

The incident commander is the senior official who is available on-site. Typically, during normal work hours the plant supervisor will begin serving as the incident commander, until the role is transferred. After work hours, the on-site head of security will typically begin serving as the incident commander until the role is transferred. Generally, the role will be transferred to the plant director, EAP coordinator, or plant supervisor, and in that order of preference. At no point will the incident commander role be left unfilled. The incident commander title must be immediately adopted by an available staff member until transferred. The incident commander has the authority to take the necessary actions described in this EAP and direct emergency response actions.

If time permits, the incident commander should consult with an operations manager or the dam safety engineer and dam inspection team before initiating notifications; however, *Imminent Failure* notifications should be initiated immediately. If a link in the chain of communication is unavailable, the incident commander will assign an alternative person to fill that link. The incident commander is responsible to confirm and ensure that all notifications are completed and updated as required.

The incident commander will ensure that the full response process (Section 5) is implemented during the event, following event detection: event evaluation and classification, dam monitoring and status updates, notifications and communications and emergency actions.

The incident commander is responsible for termination of the EAP when the event is fully resolved. For non-urgent conditions, this may take several days or possibly weeks.

The incident commander will also carry out any specific actions and duties listed in complementary NV Energy emergency response plans.

6.2.2.1 Transfer of Incident Commanders

When transferring the incident commander role and title from one person to another for whatever reason, a formal statement of the transfer must be made between the ex-commander and the commander-to-be (such as, “Are you assuming the role of incident commander?”).

The reply would be, “Yes, I am assuming the role of incident commander” or “I am taking over as incident commander.” This conversation or statement clarifies who is acting as incident commander and assuming incident commander responsibilities and that the acting incident commander is being relieved of his/her incident commander responsibilities and duties at that time.

There should be only one incident commander for a given situation.

6.2.3 Plant Supervisor

The plant supervisor or person acting in that role will act as the incident commander until relieved by NV Energy management.

When time allows, the plant supervisor shall account for all personnel on-site who may be affected or assist during a dam-safety emergency. He or she will assist the incident commander, EAP coordinator and others with EAP responsibilities.

6.2.4 EAP Coordinator

The EAP coordinator is responsible for providing and coordinating assistance to the incident commander and corporate officials during an emergency, serving as a deputy. The EAP coordinator is responsible for organizing follow-up meetings and completing follow-up reports after the termination of an event.

The EAP coordinator will ensure that the provisions of the EAP are fulfilled, including preparedness, notification contact updates and other EAP requirements. The EAP coordinator will coordinate and provide for training, EAP exercises/tests, an EAP update, and other EAP revisions, as needed (enlisting in-house or consultant dam-safety EAP experts, as needed). The EAP coordinator will answer general questions pertaining to the EAP.

The designated EAP coordinator is the plant environmental advisor.

6.2.5 Operations Manager and Dam-Safety Engineer

The operations manager will assign an engineer or retain an informed outside consultant as a dam-safety engineer. That engineer must be an experienced expert in dam design and dam safety, and be available for consultation and expert opinion prior to and during dam-safety emergencies. The dam-safety engineer, and optionally the operations manager, will participate as part of the technical team to provide periodic dam inspections in advance of an emergency, and assist in evaluation, classification and suggesting response actions when the EAP is activated or under consideration for activation. The engineers will provide input regarding the timing of EAP termination and during post-event follow-up.

6.2.6 Plant Director

The plant director has overall responsibility for the implementation of this EAP and for assigning an incident commander when in doubt.

The plant director is responsible for overseeing and confirming that the EAP responsibilities of the EAP coordinator, operations manager and dam-safety engineer have been adequately completed each year, consistent with this EAP and EAP objectives.

6.2.7 Corporate Responsibilities

Although most emergencies will be handled at the plant level, there may be instances when the Corporate Emergency Response Plan may require activation. The decision to activate the Corporate Emergency Response Plan may only be made by a corporate officer. The decision to alert the corporate officer in charge of generation will be made by the plant director or their designee.

6.2.8 Observer's Responsibilities

The observer can be anyone that notices a potential problem at the Mesa Ponds whether it is someone at the Ponds or someone monitoring the pipes and instruments. In the event of an emergency, the observer should evaluate the situation and, if necessary, contact the Control Room and the plant supervisor to initiate one of the emergency notification procedures.

Clear, concise communication of the situation is essential. All communications should be done in a calm manner so as not to unnecessarily alarm the recipient. However, communications should be done in a serious manner to demonstrate the reality of the situation. Example communications are provided in Section 2 following each notification flowchart.

6.3 External Communications

The notification flowcharts (Section 2) indicate notifications outside of NV Energy.

Do not communicate with the media (reporters). Reporters should be directed to the corporate public information officer, who is on the notification flowchart, and to the company emergency response authorities.

The corporate public information officer or his or her designated representative will be responsible for disseminating information to the media and the public on a periodic basis throughout the emergency.

If a flood warning needs to be issued, follow the notification flowchart to contact emergency dispatch.

6.4 Responsibility for Evacuation

The incident commander will determine whether evacuation is required for Station personnel and Station property. In the event of evacuation, the incident commander will make sure that the Station's gates are closed and locked.

Evacuations of the public and property not owned by NV Energy will be the responsibility of emergency responders. Notifications will be made to the emergency responders in accordance with the Notification Flowchart (Figure 2-1) and Notification Procedures (Section 2).

6.5 Responsibility for Duration, Security, Termination and Follow-Up

The EAP coordinator or incident commander will monitor the emergency situation as described above and keep local and state authorities informed of the developing conditions from the time an emergency starts until the emergency has been terminated. Security shall be maintained by the Station security and any additional help coordinated by the incident commander.

Procedures for event termination are in Section 5.5 (Step 4). The incident commander is responsible for declaring that the emergency at the facility is terminated after state or local emergency management officials have terminated their disaster response activities. After termination of the emergency situation, a follow-up evaluation should be completed by all participants. It is recommended that the results of the evaluation be documented in a written report.

Preparedness

7.1 Preparedness Overview

Preparedness actions are taken prior to EAP activation to pre-plan and enable actions during an emergency that may prevent, slow or mitigate a dam failure or other EAP event. The preparedness actions in this Plan include:

- Surveillance and monitoring
- Evaluation of detection and response timing
- Access to the site
- Response during periods of darkness
- Response during weekends and holidays
- Response during adverse weather
- Alternative systems of communication
- Emergency supplies and information
- Sources of earthen materials and earth-moving equipment to stall a breach
- Training and exercises

Preparedness actions involve the installation of equipment or the establishment of procedures for one or more of the following purposes:

- Preventing the development of emergency conditions, if possible, or warning of the development of emergency situations;
- Facilitating the operation of the ponds to limit impacts in an emergency situation; and
- Minimizing the extent of damage resulting from emergency situations that do develop

7.2 Surveillance and Monitoring

Surveillance and monitoring are an important part of the day-to-day operations at the Station. NV Energy maintains a Control Room that monitors the effluent discharge to the Mesa Ponds. Additionally, Station personnel physically observe the Mesa Ponds to ensure the water surface elevation is at or below maximum operational level. The water surface elevation should be at or below the “0” on the elevation gage for each pond.

7.3 Evaluation of Detection and Response Timing

As part of EAP training and testing, the EAP coordinator may devise annual drills or desktop assessments to assess the time it takes to detect and respond to developing emergencies. Drills may be enhanced by including simulated performance obstacles, such as loss of power, darkness, employees absent on vacation or holiday, and other hurdles to manage. Using lessons learned, revise the EAP to improve the likelihood of early detection and shorten the required response time, and to customize annual training modules. When participants are not informed of the drill in advance to improve realism, always clearly communicate that this is **ONLY A DRILL** and **NOT AN ACTUAL EMERGENCY**. Debrief participants at the end of the drill, and document results for inclusion in the EAP.

7.4 Access to the Site

Access to the Mesa Ponds from the Station involves leaving the Station at Lincoln Road and heading southwest on the Haul Road to the South Lateral Landfill Expansion also referred to as the SLLE). On the south side of the South Lateral Landfill Expansion, head south and continue to the Mesa Ponds. The access route from the Station to the Mesa Ponds can be found in Figure 4-1. Refer to Table 4-1 for directions to the Station.

Overton, Mesquite and Las Vegas have emergency medical services that could respond to the plant. These cities are approximately 20 (Overton), 40 (Mesquite), and 55 (Las Vegas) miles from the Station. It can be assumed that most emergency responders would be coming from Mesquite or Las Vegas as these are the largest metropolitan areas close to the facility.

7.5 Response during Periods of Darkness

In the event of an emergency incident during periods of darkness, the observer would contact security, who would then contact the operations manager. The operations manager would enact the emergency notification pertinent to the emergency level of the incident at the Mesa Ponds.

Exterior lighting at the Station and ponds is provided by NV Energy, while the electrical provider in the local area is Overton Power. Minimal lighting is provided at the Mesa Ponds. During a power failure, the operations manager will be notified and act as needed. Temporary mobile lighting may be available at the plant and could be used at an incident location. NV Energy Transmission and Distribution Department staff or the Overton Power District would be contacted by the plant supervisor to repair damaged power poles or lines.

7.6 Response during Weekends and Holidays

The Station is staffed 7 days per week from 6 a.m. to 6 p.m. Security personnel are present outside of those working hours. The ponds are typically checked a minimum of 4 days per week. In the event of an emergency incident during weekends or holidays, the observer would contact the Control Room who would then contact the plant supervisor. The plant supervisor would initiate the notification procedure pertinent to the emergency level of the incident.

7.7 Response during Adverse Weather

Changes in the weather associated with fast-moving severe storms give little or no warning. In the event of impending severe weather, plant personnel will monitor the local emergency weather broadcast. The safety of on-site personnel and the integrity of plant equipment, in that order, will be the first concerns. The plant director will be notified of any impending severe storms. If the plant director cannot be contacted, the plant supervisor or operations manager will determine the appropriate action.

During severe thunderstorms, caution should be used during outside activities. If thunderstorms are in the immediate area of the plant, outside activities should be limited as much as possible. Personnel should avoid being at the highest elevation on any structure. The safety of plant personnel should be the prime concern and reasonable judgment should be used.

In the event of an emergency incident during periods of adverse weather, the observer would contact the Control Room who would then contact the plant supervisor. The plant supervisor would initiate the notification procedure pertinent the emergency level of the incident.

Table 7-1 lists emergency resources, including equipment to be used during periods of adverse weather.

7.8 Alternative Systems of Communication

Systems of communication available to the Station personnel (apart from conventional telephone service) include cellular phones, pagers and radios.

7.9 Emergency Supplies and Information

7.9.1 Stockpiling Materials and Equipment

In general, several 0.5-ton pickup trucks are available for use by the Station staff. Additional emergency equipment that is available is listed in Table 7-1. Equipment is divided into that readily available and other equipment that is available but would likely require more time to deliver to the ponds. If extra equipment (not listed in Table 7-1), more personnel, specific materials, or additional expertise is needed for emergency response actions, the EAP coordinator should contact an appropriate local contractor for these services.

The Station has an emergency medical technician that has the capability and resources to supplement the Station staff at the ponds as necessary during high water events or other emergency conditions. The area is served by a volunteer fire department.

Table 7-1. Available Emergency Equipment

Quantity	Description
1	One-ton, 4x4 pickup
2	Half-ton, 4x4 pickups
1	Caterpillar 928 front-end loader
2	Bobcat skid steer loaders
1	Ranger rescue boat with 2-25 horsepower motors
11	All-terrain vehicles

7.9.2 Coordination of Information

Knowledge of current and forecasted streamflow and weather information may prove critical to emergency situation decisions at the Station ponds. Sources of such information are described below.

The U.S. Geological Survey maintains a streamflow gage approximately 1 mile downstream of the Station on the Muddy River. The gage measures and records the stage of the river in feet. River flow in cubic feet per second can be estimated using the stage-discharge relationship. Stage can be obtained from the gage at any time. Note that the U.S. Geological Survey periodically modifies streamflow gage rating tables and, therefore, the rating should be replaced when appropriate.

Related information is available at the following web addresses:

<http://waterdata.usgs.gov/nv/nwis/rt> – U.S. Geological Survey Real-Time Water Data for Nevada

<http://www.wrh.noaa.gov/vef/> – National Weather Service (Las Vegas, NV).

<http://water.weather.gov/ahps2/index.php?wfo=vef> – National Weather Service Advanced Hydrologic Prediction Service.

7.10 Training and Exercises

The EAP coordinator will provide EAP training for applicable staff. It is recommended that that training occur annually. Part of the training may include an annual EAP exercise that includes evaluation of detection and response timing (Section 7.3). Period exercises should be performed as required by the Nevada Administrative Code. At a minimum, conduct an annual face-to-face meeting or exercise with local emergency responders as required by the CCR Rule. It is recommended that the annual meetings or exercises be documented. Additional details are provided in Appendix A.

Inundation Maps

8.1 Results of Dam Breach Analysis

A “sunny day” full pool dam breach analysis was performed on the Mesa Ponds. The following is a list of results from the analysis. The analysis is found in the “Initial Hazard Potential Classification Assessment, Ponds M5 and M7, Reid Gardner Generating Station”, created by CH2M and dated October 11, 2016.

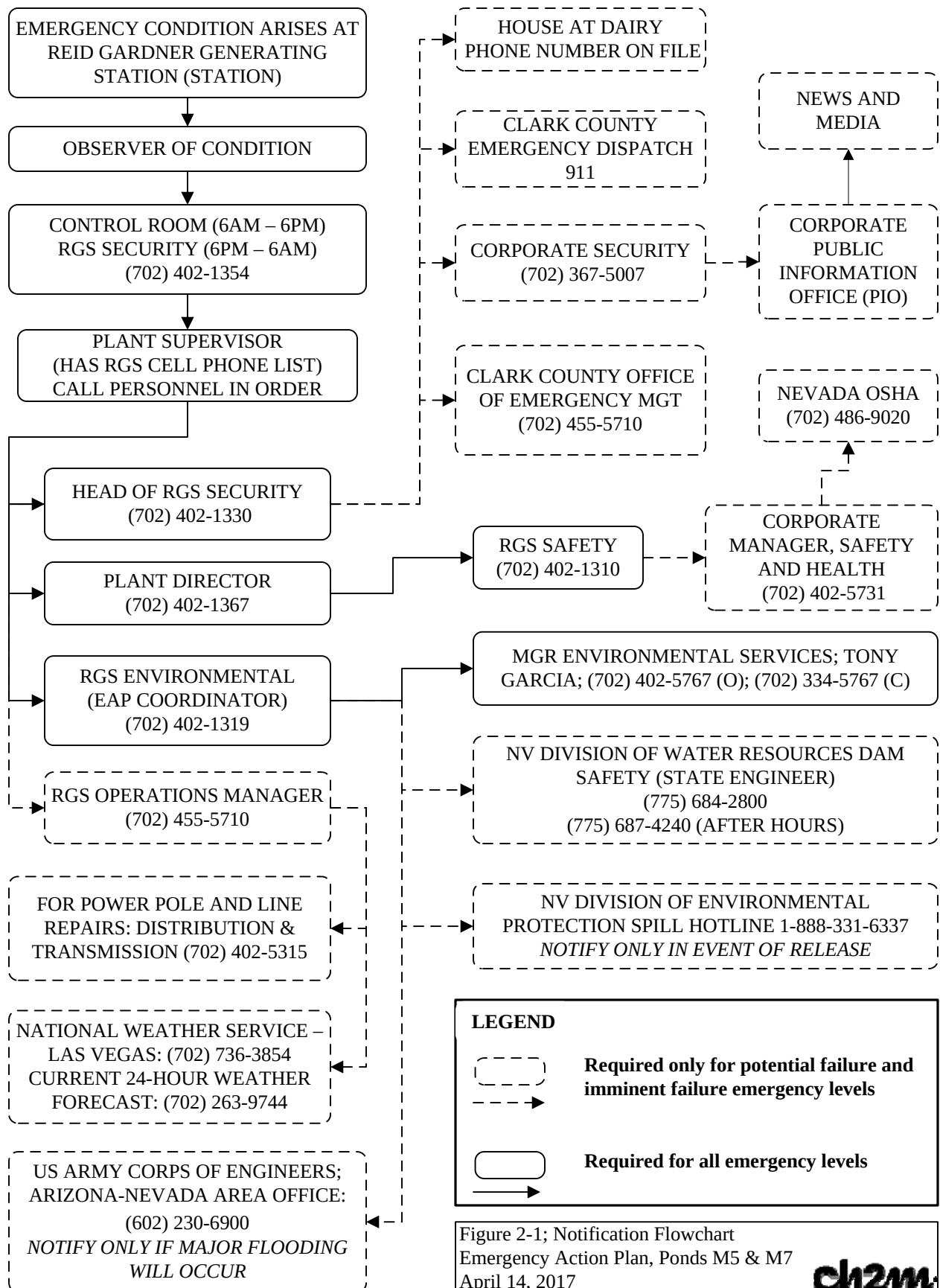
- The resulting water surface elevation of the Muddy River from a theoretical dam breach is less than the 100-year water surface elevation on the Muddy River.
- The leading edge of the flood wave will reach the private residence, near where Hidden Valley Road crosses the Muddy River, in approximately 0.60 hours after a dam breach of the Mesa Ponds.
- The maximum flow at the private residence is approximately 4,000 cubic feet per second.
- The flow from a theoretical dam breach of the Mesa Ponds will be contained in the Muddy River banks approximately 2.0 river miles from the Station.

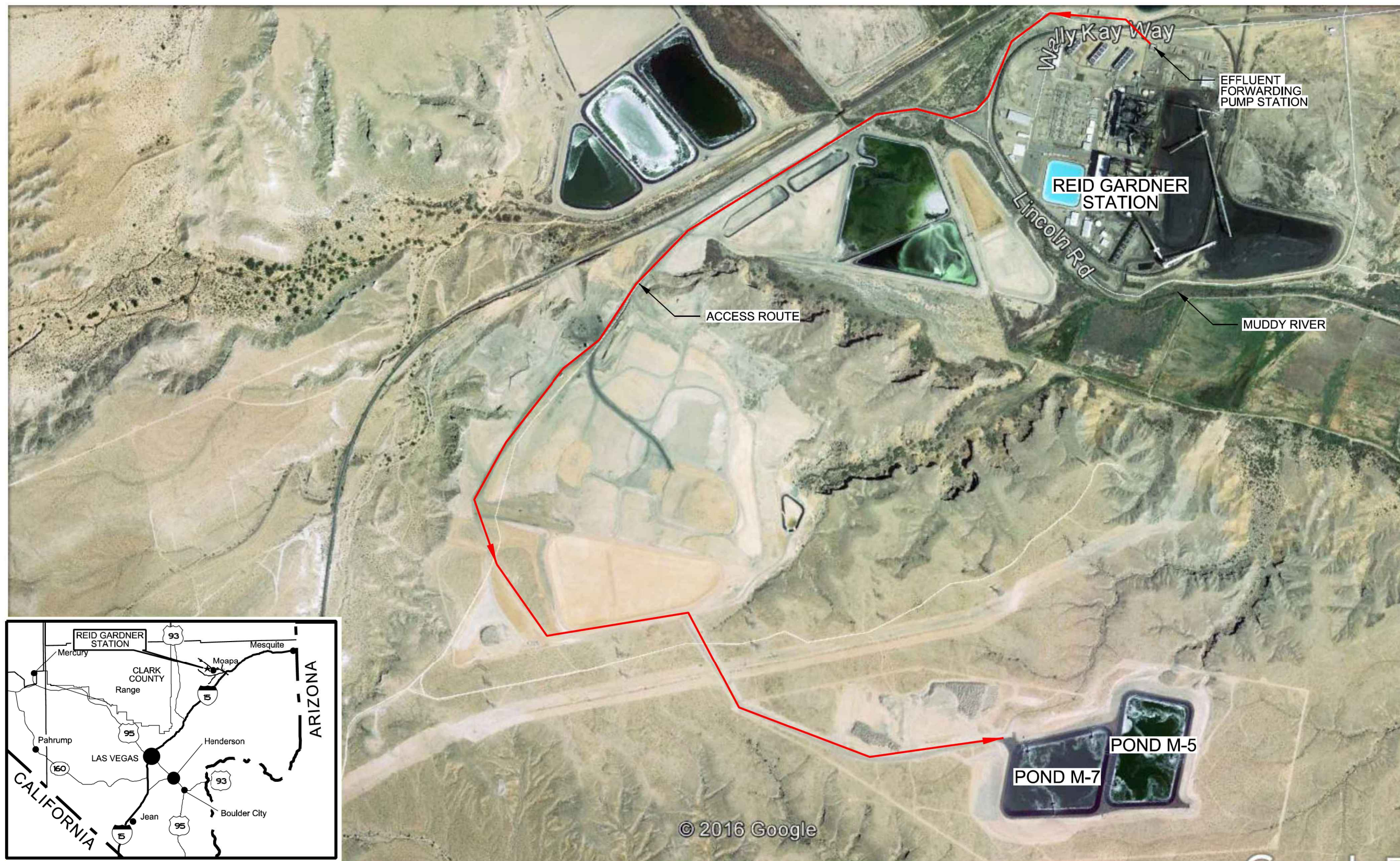
8.2 Inundation Maps

Figure 8-1, Inundation Map 1, and Figure 8-2, Inundation Map 2, on the following pages show the inundation limits due to the “sunny day” failure scenario analyzed for Pond M5.

Limits of inundation and flooding characteristics shown on the map are approximate and based on the theoretical failure of the Mesa Ponds described above. This map is only to be used as a general basis for downstream hazard evaluation. Actual inundation and flood wave characteristics may vary depending upon actual river and berm conditions during failure.

Figures





Location & Vicinity Map

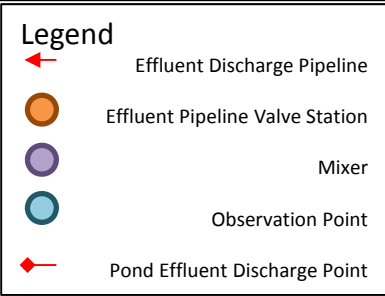
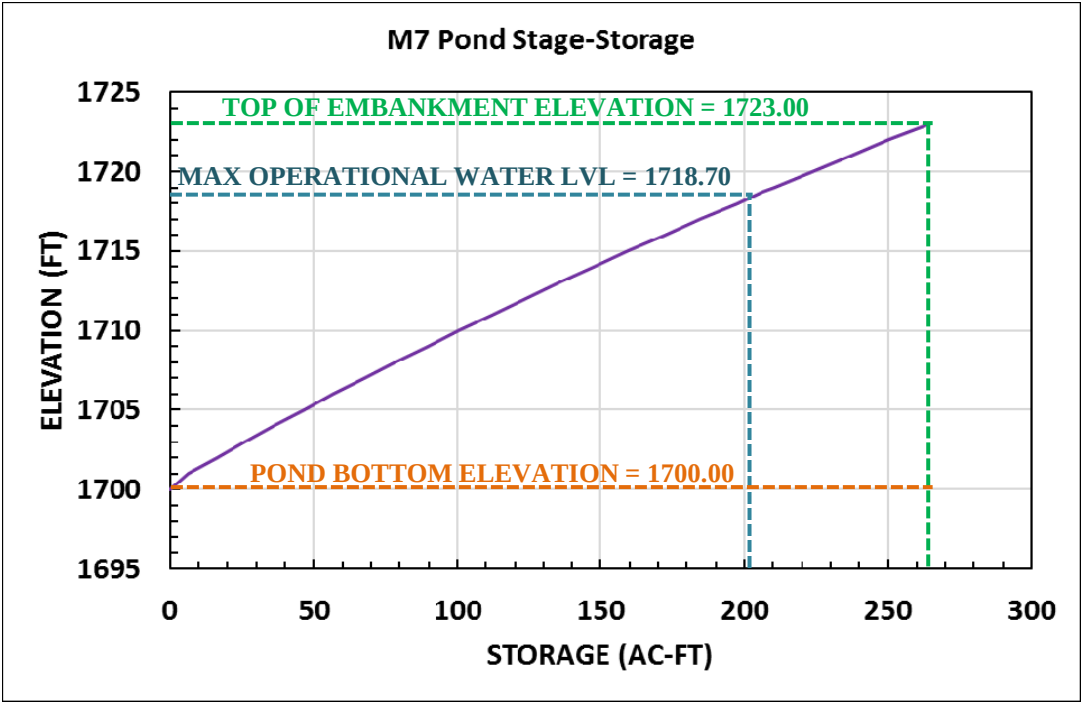
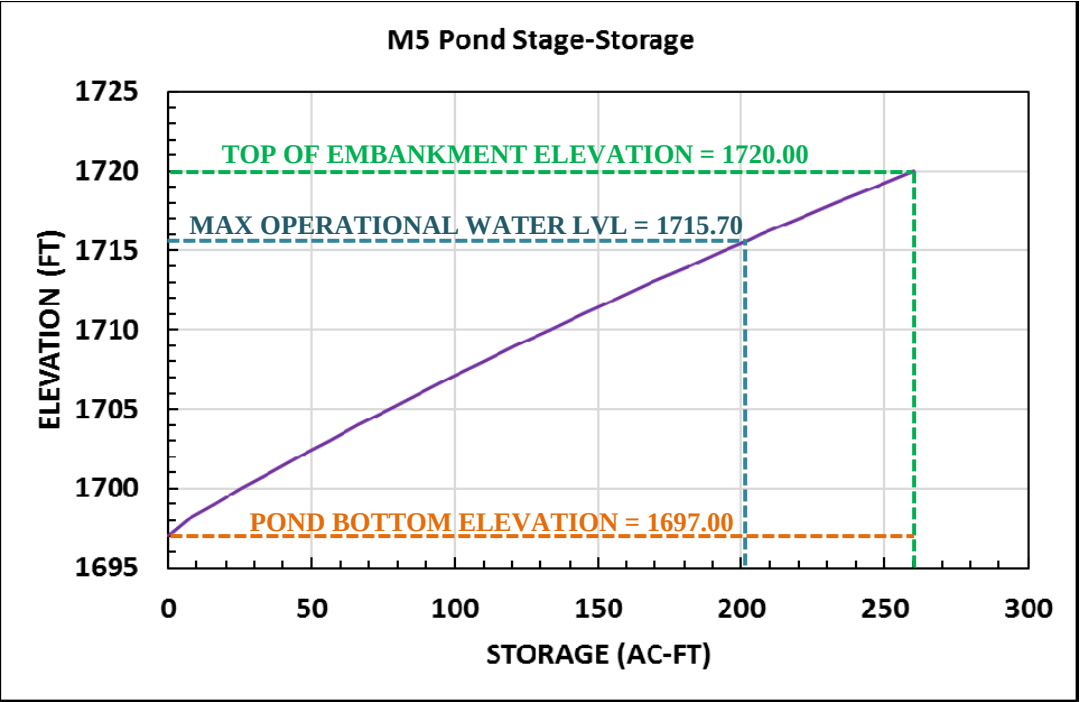
Mesa Ponds M5 and M7

Emergency Action Plan, Reid Gardner Station

Figure 4-1

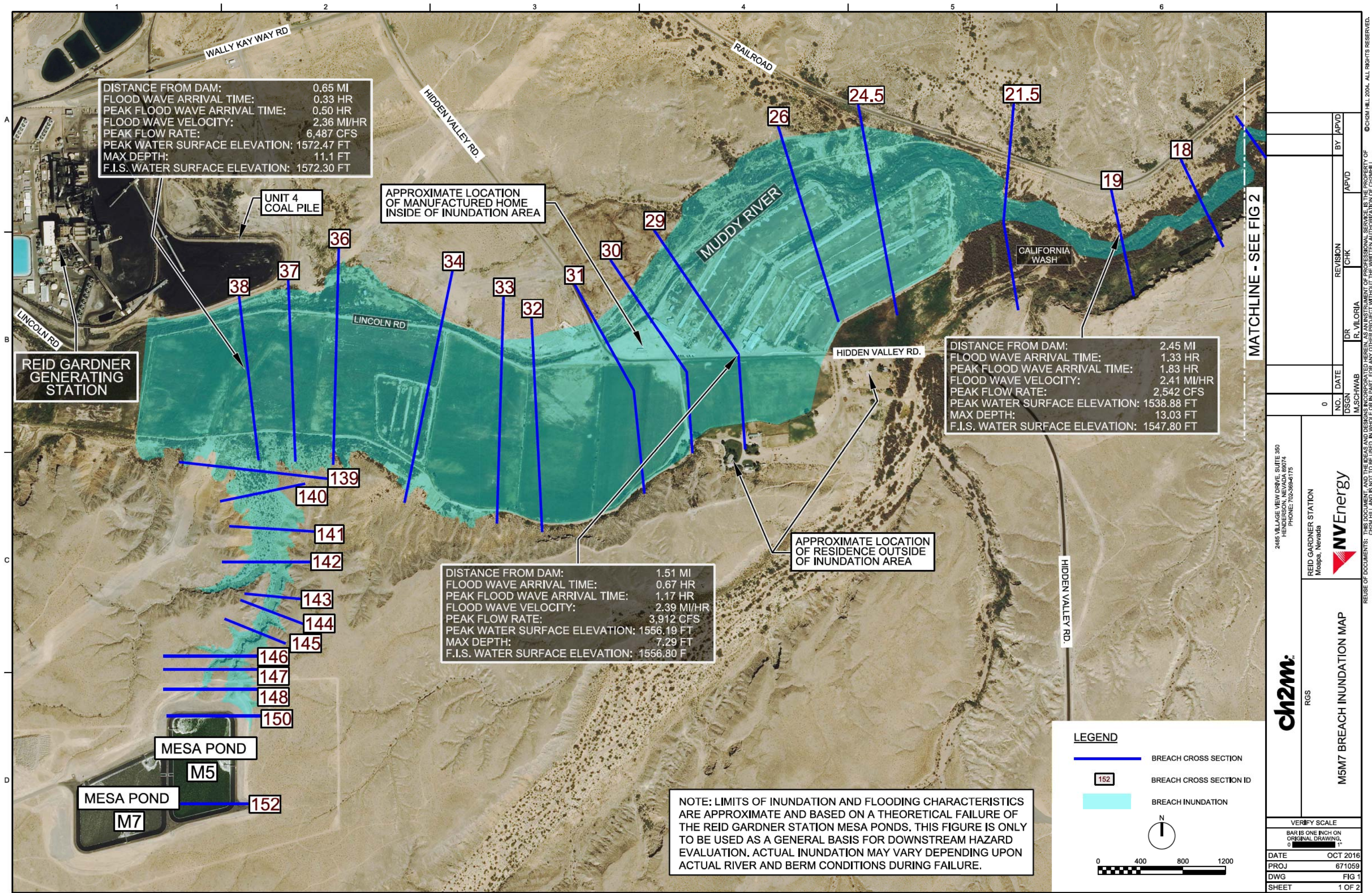
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Note: all elevations reference NAVD 1988 vertical datum

Figure 4-2
Dam Facilities Map
Mesa Ponds M5 and M7
Dam Facilities and Hydraulic Information
Emergency Action Plan
Reid Gardner Station
Moapa, Nevada



Appendix A

Plans for Training, Exercising, Updating and Posting the Plan

Plans for Training, Exercising, Updating and Posting the Plan

B.1 Training

EAP training is to take place for applicable facility employees periodically (annual is recommended).

Training for facility personnel should include a review of the EAP and the notification flowchart as well as overall emergency response training. Specific items to be covered include how to correctly respond to emergencies, emergency procedures, and the Station chain of command. Trained personnel should be familiar with the elements of this Plan, the availability of equipment, and their responsibilities and duties. Technically qualified personnel should be trained in problem detection and evaluation and appropriate remedial measures. A sufficient number of people should be trained to ensure adequate coverage of the positions listed in Sections 4 and 5, the notification flowchart, and the notification procedure.

Training is to be performed by the EAP coordinator or specialists arranged by the EAP coordinator as identified in Sections 6 and 7 of this Plan. Training for the EAP coordinator is available from the FEMA and the Nevada Division of Emergency Management at the addresses below:

FEMA

Region IX: Oakland
1111 Broadway., Suite 1200
Oakland, CA 94607
510.627.7220

Nevada Division of Emergency Management
2478 Fairview Drive
Carson City, NV 89701
775.687.0300

B.2 Exercising

Training should be performed at a frequency that ensures a state of readiness of personnel who are responsible to take action during an emergency situation. Testing should include a drill that simulates an emergency condition. Special procedures for nighttime, weekends and holidays, as outlined in Section 6, should be included. If possible, coordination and consultation with state and local emergency management officials and other organizations listed in the notification flowchart should be included in the drill and functional exercises. Participation by the affected state and local officials will enhance the effectiveness of the exercises. The exercises should be evaluated and the EAP should be revised to correct any deficiencies noted. The following subsections discuss the different types of exercises that could be conducted at the Station.

At a minimum, to meet the requirements of CCR Rule Section 257.73(a)(3)(i)(E), the annual exercise must include a face-to-face meeting or exercise with local emergency responders. It is recommended that the annual exercise required to satisfy the CCR Rule be documented.

B.2.1 Orientation Seminar

This exercise is an annual seminar that involves bringing together those with roles or interests in the EAP. The individuals and departments listed on the notification flowchart (Figure 1-1) would attend this seminar.

A representative from each of the local and state emergency agencies and the neighboring property owners should be encouraged to attend. The EAP coordinator or their representative will lead the presentation and discuss the roles, responsibilities and procedures associated with the EAP. The orientation seminar can also be used to discuss and describe technical matters with involved, non-technical personnel.

B.2.2 Drill

A drill is the lowest level of exercise that involves an actual implementation of the EAP. A drill should test, develop and maintain skills in a single emergency response procedure. An example of a drill is an in-house exercise performed to verify the validity of telephone numbers and other means of communication.

B.2.3 Tabletop Exercise

The tabletop exercise is a higher level exercise than a drill. The tabletop exercise involves a meeting of facility personnel, potentially with state and local emergency management officials, in a conference room environment. The format of the meeting should include a description of a simulated event and a discussion to evaluate the EAP response procedures. Recommendations should be made to revise the EAP to resolve concerns regarding coordination and responsibilities.

B.2.4 Functional Exercise

An outline of a functional drill exercise for the EAP is as follows:

- Plant supervisor and EAP coordinator meet in the Control Room.
- Plant supervisor initiates a **TEST** notification procedure using the notification flowchart. It is imperative that all communications during the test clearly state that it is a test. An example communication would be:
- My name is _____ and I am a plant supervisor at the Reid Gardner Station in Moapa, Nevada. We are conducting a test of the Emergency Action Plan for the Mesa Ponds. Repeat, **THIS IS A TEST** and there is no actual emergency at the ponds. Please refer to your copy of the Emergency Action Plan and make any communications that are required. Be sure that your communications clearly identify that this is only a test.
- **Calls to emergency agencies should be made using numbers other than "911."**
- The EAP coordinator should take notes throughout the exercise. Notes should include start time, time required to reach each person on the notification flowcharts, problems and any other information that might prove useful.
- Subsequent to the exercise, the EAP coordinator should fill out the Emergency Action Plan Exercise Reporting Form. The form should include the following (a blank copy is included in Appendix C):
 - Time required for completing notifications;
 - Critique on notification procedure; and
 - Verification that all persons notified had current copies of the EAP.

B.3 Updating

Evaluate the EAP, at a minimum every 5 years, to ensure accuracy per the CCR Rule Section 257.(a)(3)(ii). It is recommended that the EAP should be reviewed at least annually. Update the EAP as necessary to keep it current, incorporate lessons learned from the exercises and whenever there is a change in conditions that would substantially affect the EAP. The review and update should include:

- Names, titles, telephone numbers, etc. of operating personnel and personnel responsible for implementation of the EAP.

- Names and telephone numbers of contacts to be notified under the EAP (for example, state or local agencies, neighboring property owners, media, etc.)
- Changes in the ponds that could affect results of the embankment failure analysis (for example, changes in flood inundation areas, downstream developments, embankment heights, or in the reservoir)
- Changes in operation and/or maintenance of the ponds that could substantially affect the implementation of the EAP.

Any and all changes to the EAP must be distributed to all holders of the EAP listed in Table B-1.

The EAP coordinator should ensure that each original copy of the EAP on the distribution list (Table B-1) is up to date after a revision is completed.

Updated or revised EAPs must be placed in the Station's operating record per CCR Rule Section 257.73(a)(3)(ii)(B). The EAP, and any amendment must be certified by a qualified professional engineer per CCR Rule Section 257.73(a)(3)(iv).

A distribution summary for copies of the EAP is shown in Table B-1 below.

Table B-1. EAP Distribution Summary

Document Control Number	Name	Address
1	Control Room	Reid Gardner Generating Station 501 Wally Kay Way Moapa, Nevada 89025
2	Jason Hammons, Plant Director	Reid Gardner Generating Station 501 Wally Kay Way Moapa, Nevada 89025
3	Michael Rojo, Supervisor, Environmental EAP coordinator	Reid Gardner Generating Station 501 Wally Kay Way Moapa, Nevada 89025
4	Todd Robison Operations Manager	Reid Gardner Generating Station 501 Wally Kay Way Moapa, Nevada 89025
5	To Be Determined, Manager, Health and Safety	NV Energy P.O. Box 98910 Las Vegas, Nevada 89151 <i>Physical Address: 6226 W. Sahara Ave.</i>
6	Tony Garcia Manager, Environmental	NV Energy P.O. Box 98910 Las Vegas, Nevada 89151 <i>Physical Address: 6226 W. Sahara Ave.</i>
7	Nathan Betts Engineer of Record	CH2M HILL Engineers, Inc. 2485 Village View Drive, Suite 350 Henderson, NV 89074

It is recommended that the entire EAP be reprinted and redistributed to all parties at least every 5 years.

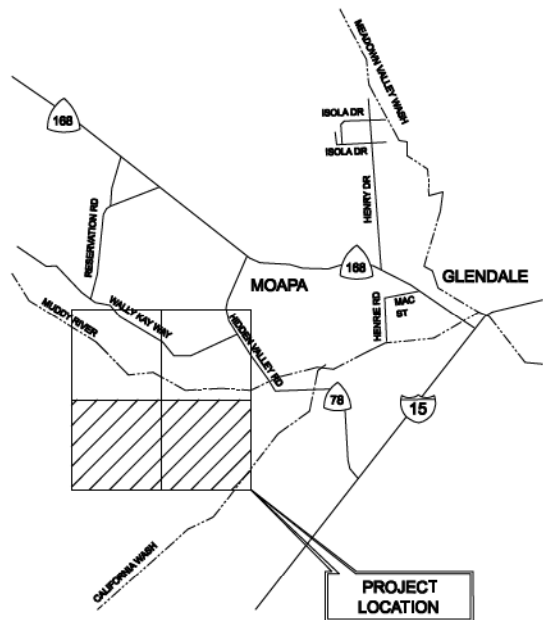
Appendix B

Select Mesa Ponds M5 and M7 Record Drawings

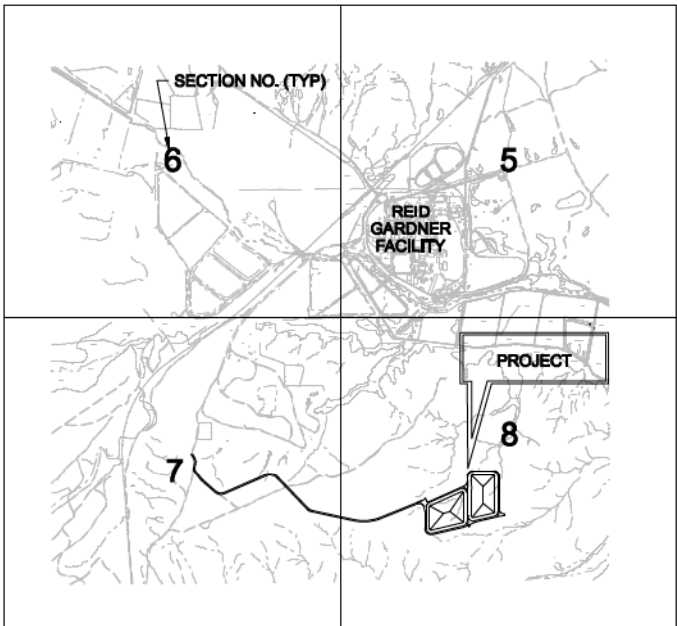


MOAPA, NEVADA
REID GARDNER STATION
WASTEWATER SYSTEM IMPROVEMENT PROJECTS
DRAWINGS FOR CONSTRUCTION OF
MESA EVAPORATION PONDS - M5 AND M7

M5: RC171 WO# 9825650201
M7: RC171 WO# 9821855101
JULY 2011



VICINITY MAP



LOCATION MAP

RECORD DRAWINGS

Revisions Drawn By: CH2M HILL Date: July 2011
THESE RECORD DRAWINGS HAVE BEEN PREPARED, IN PART, ON THE BASIS OF INFORMATION COMPILED BY OTHERS IN 2011. THEY ARE NOT INTENDED TO REPRESENT IN DETAIL THE EXACT LOCATION, TYPE OF COMPONENT NOR MANNER OF CONSTRUCTION. THE ENGINEER WILL NOT BE RESPONSIBLE FOR ANY ERRORS OR OMISSIONS WHICH HAVE BEEN INCORPORATED INTO THE RECORD DRAWINGS.

CH2MHILL

MESA EVAPORATION PONDS M5 AND M7
M5: RC171 WO# 9825650201 M7: RC171 WO# 9821855101

TITLE SHEET, VICINITY AND
LOCATION MAPS

2485 VILLAGE VIEW DRIVE, SUITE 350
HENDERSON, NEVADA 89074
PHONE: 702-398-6175

REID GARDNER STATION
Wastewater System
Improvement Projects
Moapa, Nevada

NO.	1	0	DATE	07/14/11	4/16/10
DSGN	P. TSCHESCHKE	DR	J. TSCHESCHKE	CHK	J. WALKER
REVISION	RECORD DRAWING ISSUED FOR CONSTRUCTION				
BY	APVD	BY	APVD	BY	APVD
NKB	SWD	NKB	SWD	NKB	SWD
PDT	SWD	PDT	SWD	PDT	SWD
S. DETHLOFF					

VERIFY SCALE

BAR IS ONE INCH ON
ORIGINAL DRAWING.

DATE JULY 2011

PROJ 401621

DWG G-1

SHEET 1 OF 147

DRAWING INDEX

SHEET OR PAGE NO.	DWG NO. OR SHT NO.	TITLE	INCLUDED WITH DAM IMPOUND APPLICATION	ENGINEER
GENERAL DRAWINGS FOR SCHEDULE A AND B				
1	G-1	Title Sheet, Vicinity and Location Maps	Y	CH2M HILL
2	G-1A	Drawing Index	Y	CH2M HILL
3	G-2	Abbreviations, General Notes and Civil Legend	Y	CH2M HILL
4	G-3	Structural Notes	Y	CH2M HILL
5	G-4	Mechanical Legend	Y	CH2M HILL
6	G-5	Electrical Legend	Y	CH2M HILL
7	G-6	Instrumentation and Control Legend	Y	CH2M HILL
SCHEDULE A DRAWINGS				
8	D-1	Elevation/Capacity and Elevation/Area Curves	Y	CH2M HILL
	D-2	Not Used		
9	D-3	General Layout Plan Pond M5	Y	CH2M HILL
10	D-4	General Layout Plan Pond M7	Y	CH2M HILL
	D-5	Not Used		
11	D-6	Berm Profile Pond M5	Y	CH2M HILL
12	D-7	Berm Profile Pond M7	Y	CH2M HILL
13	C-1	General Site Plan	Y	CH2M HILL
14	C-2	General Pond Site Plan	Y	CH2M HILL
15	C-3	Pond Site Plan - Area 1	Y	CH2M HILL
16	C-4	Pond Site Plan - Area 2	Y	CH2M HILL
17	C-5	Pond Site Plan - Area 3	Y	CH2M HILL
18	C-6	Pond Site Plan - Area 4	Y	CH2M HILL
19	C-7	Pond Site Plan - Area 5	Y	CH2M HILL
20	C-8	Pond Site Plan - Area 6	Y	CH2M HILL
21	C-9	Drainage Ditch Details	Y	CH2M HILL
22	C-10	Pond Sections	Y	CH2M HILL
	C-11	Not Used		
23	C-12	Pond Berm Typical Sections	Y	CH2M HILL
	C-13	Not Used		
	C-14	Not Used		
24	C-15	Pond M5 Liner Plan	Y	CH2M HILL
25	C-16	Pond M7 Liner Plan	Y	CH2M HILL
26	C-17	Leak Detection and Recovery System - Civil Details	Y	CH2M HILL
27	C-18	Leak Detection and Recovery System and Liner System Details	Y	CH2M HILL
28	C-19	Liner System Details	Y	CH2M HILL
SCHEDULE B DRAWINGS				
29	C-20	Paved MEP Access Road		Forsgren Associates
30	C-21	Paved MEP Access Road		Forsgren Associates
31	C-22	Paved MEP Access Road		Forsgren Associates
32	C-23	Paved MEP Access Road	Y	Forsgren Associates
33	C-24	Civil Details	Y	Forsgren Associates
34	P-1	Effluent Discharge Pipeline - Site West		Forsgren Associates
35	P-2	Effluent Discharge Pipeline - Site East	Y	Forsgren Associates
36	P-3	Pond Berm Typical Sections	Y	Forsgren Associates
37	P-4	Discharge Pipeline Details	Y	Forsgren Associates
38	P-5	Effluent Discharge Pipelines - Sta 0+00 to 10+00	Y	Forsgren Associates
39	P-6	Effluent Discharge Pipelines - Sta 10+00 to 20+00	Y	Forsgren Associates
40	P-7	Effluent Discharge Pipelines - Sta 20+00 to 25+00	Y	Forsgren Associates
41	S-1	General Notes	Y	Forsgren Associates
42	S-2	Bridge Plan and Elevation	Y	Forsgren Associates
43	S-3	Foundation M5-2, M5-3	Y	Forsgren Associates
44	S-4	Foundation M7-1	Y	Forsgren Associates
45	S-5	Foundation M7-2, M7-3, M5-1	Y	Forsgren Associates
46	S-6	Column Details	Y	Forsgren Associates
47	S-6a	Column Details		Forsgren Associates
48	S-7	Pond M5 Pier/Platform Plan		Forsgren Associates
49	S-7A	Pond M7 Pier/Platform Plan		Forsgren Associates
50	S-8	Pier Cap M5-2, M5-3 Details		Forsgren Associates
51	S-8a	Pier Cap M5-2, M5-3 Details		Forsgren Associates
52	S-8b	Pier Cap M5-2, M5-3 Details		Forsgren Associates
53	S-9	Pier Cap M7-1 Details		Forsgren Associates
54	S-9a	Pier Cap M7-1 Details		Forsgren Associates
55	S-9b	Pier Cap M7-1 Details		Forsgren Associates
56	S-10	Pier Cap M7-2, M7-3, M5-1 Details		Forsgren Associates
57	S-10a	Pier Cap M7-2, M7-3, M5-1 Details		Forsgren Associates
58	S-10b	Pier Cap M7-2, M7-3, M5-1 Details		Forsgren Associates
59	S-11	Details	Y	Forsgren Associates
60	S-11A	Details	Y	Forsgren Associates
61	S-11B	Details	Y	Forsgren Associates
62	S-11C	Details	Y	Forsgren Associates
	S-11D	Not Used		
63	S-11E	Details		Forsgren Associates
64	S-12	Mixer Access Bridge #M7-3 Erection Layout		Solutions Inc / R&M Eng.
65	S-13	Mixer Access Bridge #M7-3 Splice Details		Solutions Inc / R&M Eng.
66	S-14	Mixer Access Bridge #M7-3 Plans, Sections & Details		Solutions Inc / R&M Eng.
67	S-15	Mixer Access Bridge #M7-3 Plans, Sections & Details		Solutions Inc / R&M Eng.
68	S-16	Mixer Access Bridge #M7-3 Plans, Sections & Details		Solutions Inc / R&M Eng.
69	S-17	Mixer Access Bridge #M7-3 Plans, Sections & Details		Solutions Inc / R&M Eng.
70	S-18	Mixer Access Bridge #M7-3 Plans, Sections & Details		Solutions Inc / R&M Eng.
71	S-19	Mixer Access Bridge #M7-3 Plans, Sections & Details		Solutions Inc / R&M Eng.
72	S-20	Mixer Access Bridge #M5-1,2,3 & M7-1,2 Erection Layout		Solutions Inc / R&M Eng.
73	S-21	Mixer Access Bridge #M5-1,2,3 & M7-1,2 Splice Details		Solutions Inc / R&M Eng.
74	S-22	Mixer Access Bridge #M5-1,2,3 & M7-1,2 Plans, Sections & Details		Solutions Inc / R&M Eng.

SHEET OR PAGE NO.	DWG NO. OR SHT NO.	TITLE	INCLUDED WITH DAM IMPOUND APPLICATION	ENGINEER
75	S-23	Mixer Access Bridge #M5-1,2,3 & M7-1,2 Plans, Sections & Details		Solutions Inc / R&M Eng.
76	S-24	Mixer Access Bridge #M5-1,2,3 & M7-1,2 Plans, Sections & Details		Solutions Inc / R&M Eng.
77	S-25	Mixer Access Bridge #M5-1,2,3 & M7-1,2 Plans, Sections & Details		Solutions Inc / R&M Eng.
78	S-26	Mixer Access Bridge #M5-1,2,3 & M7-1,2 Plans, Sections & Details		Solutions Inc / R&M Eng.
79	S-27	Mixer Access Bridge #M5-1,2,3 & M7-1,2 Plans, Sections & Details		Solutions Inc / R&M Eng.
80	S-28	Mixer Platforms General Steel Notes and Standard Details		Solutions Inc / R&M Eng.
81	S-29	Mixer Platforms Handrail Standards		Solutions Inc / R&M Eng.
82	S-30	Mixer Platform #M5-1 Steel Framing and Grating Plan		Solutions Inc / R&M Eng.
83	S-31	Mixer Platform #M5-1 Sections and Details		Solutions Inc / R&M Eng.
84	S-32	Mixer Platform #M5-1 Sections and Details		Solutions Inc / R&M Eng.
85	S-33	Mixer Platform #M5-1 Sections and Details		Solutions Inc / R&M Eng.
86	S-34	Mixer Platform #M5-2 Steel Framing and Grating Plan		Solutions Inc / R&M Eng.
87	S-35	Mixer Platform #M5-2 Sections and Details		Solutions Inc / R&M Eng.
88	S-36	Mixer Platform #M5-2 Sections and Details		Solutions Inc / R&M Eng.
89	S-37	Mixer Platform #M5-2 Sections and Details		Solutions Inc / R&M Eng.
90	S-38	Mixer Platform #M5-3 Steel Framing and Grating Plan		Solutions Inc / R&M Eng.
91	S-39	Mixer Platform #M5-3 Sections and Details		Solutions Inc / R&M Eng.
92	S-40	Mixer Platform #M5-3 Sections and Details		Solutions Inc / R&M Eng.
93	S-41	Mixer Platform #M5-3 Sections and Details		Solutions Inc / R&M Eng.
94	S-42	Mixer Platform #M7-1 Steel Framing and Grating Plan		Solutions Inc / R&M Eng.
95	S-43	Mixer Platform #M7-1 Sections and Details		Solutions Inc / R&M Eng.
96	S-44	Mixer Platform #M7-1 Sections and Details		Solutions Inc / R&M Eng.
97	S-45	Mixer Platform #M7-1 Sections and Details		Solutions Inc / R&M Eng.
98	S-46	Mixer Platform #M7-1 Sections and Details		Solutions Inc / R&M Eng.
99	S-47	Mixer Platform #M7-1 Sections and Details		Solutions Inc / R&M Eng.
100	S-48	Mixer Platform #M7-2 Steel Framing and Grating Plan		Solutions Inc / R&M Eng.
101	S-49	Mixer Platform #M7-2 Sections and Details		Solutions Inc / R&M Eng.
102	S-50	Mixer Platform #M7-2 Sections and Details		Solutions Inc / R&M Eng.
103	S-51	Mixer Platform #M7-2 Sections and Details		Solutions Inc / R&M Eng.
104	S-52	Mixer Platform #M7-2 Sections and Details		Solutions Inc / R&M Eng.
105	S-53	Mixer Platform #M7-3 Steel Framing and Grating Plan		Solutions Inc / R&M Eng.
106	S-54	Mixer Platform #M7-3 Sections and Details		Solutions Inc / R&M Eng.
107	S-55	Mixer Platform #M7-3 Sections and Details		Solutions Inc / R&M Eng.
108	S-56	Mixer Platform #M7-3 Sections and Details		Solutions Inc / R&M Eng.
109	S-57	Mixer Platforms Embedded Plate Sections and Details		Solutions Inc / R&M Eng.
110	S-58	General Arrangement Rising Post		Solutions Inc / OnPoint
111	S-59	GA Elevations M5-3 Rising Post		Solutions Inc / OnPoint
112	S-60	GA Elevations M5-1,2 & M7-1,2,3 Rising Post		Solutions Inc / OnPoint
113	S-61	Reserved		Solutions Inc / OnPoint
114	S-62	General Arrangement Mixer/Diffuser		Solutions Inc / OnPoint
115	S-63	Bill of Materials Headframe Assembly		Solutions Inc / OnPoint
116	S-64	Fabrication Detail Headframe Assembly		Solutions Inc / OnPoint
117	S-65	Fabrication Detail Headframe Parts 1		Solutions Inc / OnPoint
118	S-65a	Assembly Detail Headframe Parts		Solutions Inc / OnPoint
119	S-66	Fabrication Detail Headframe Parts 2		Solutions Inc / OnPoint
120	S-67	Fabrication Details Roller Mounts		Solutions Inc / OnPoint
121	S-68	Fabrication Details Aeration Feed Pipe		Solutions Inc / OnPoint
122	S-69	Fabrication Details Ratchet Assembly		Solutions Inc / OnPoint
123	S-70	Fabrication Details Diffuser Assembly		Solutions Inc / OnPoint
124	S-71	Fabrication Details Motor Mount		Solutions Inc / OnPoint
125	S-72	Installation Details Air Hose Assembly		Solutions Inc / OnPoint
126	S-73	Installation Details Cable Support		Solutions Inc / OnPoint
127	S-74	Fabrication Details 32' Post M5-3		Solutions Inc / OnPoint
128	S-75	Fabrication Details 30' post M5-1,2 & M7-1,2,3		Solutions Inc / OnPoint
129	S-76	Fabrication Detail Post Attachments & Brackets		Solutions Inc / OnPoint
130	M-1	Leak Detection and Recovery System - Mechanical Details	Y	Forsgren Associates
131	M-2	Pond M7 Mechanical - Site Plan	Y	Forsgren Associates
132	M-3	Pond M5 Mechanical - Site Plan	Y	Forsgren Associates
133	M-4	Mixer Bridge and Platform - Mechanical Plan		Forsgren Associates
134	M-5	Mixer Bridge and Platform - Mechanical Sections		Forsgren Associates
135	M-6	Blower Pad	Y	CH2M HILL
136	E-0	Electrical Legend	Y	Forsgren Ass./TJK Eng.
137	E-1	Electrical Site Plan	Y	Forsgren Ass./TJK Eng.
138	E-2	One Line Diagram		Forsgren Ass./TJK Eng.
139	E-3	Electrical Details		Forsgren Ass./TJK Eng.
140	E-4	Electrical Details	Y	Forsgren Ass./TJK Eng.
141	E-5	Electrical Calculations		Forsgren Ass./TJK Eng.
142	E-6	Electrical Details		Forsgren Ass./TJK Eng.
143	E-7	Electrical Details		Forsgren Ass./TJK Eng.
144	E-8	Control Wiring Details		Forsgren Ass./TJK Eng.
145	E-9	Electrical Details	Y	Forsgren Ass./TJK Eng.
146	N-0	P&ID Legend		Forsgren Ass./TJK Eng.
147	N-1	P&ID		Forsgren Ass./TJK Eng.

RECORD DRAWINGS

Revisions Drawn By: CH2M HILL Date: July 2011
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2485 VILLAGE VIEW DRIVE, SUITE 350
HENDERSON, NEVADA 89074
PHONE: 702-398-6176


REID GARDNER STATION
Wastewater System
Improvement Projects
Moapa, Nevada

MESA EVAPORATION PONDS M5 AND M7
M5: RCT11 WOF# 9825650201 M7: RCT11 WOF# 9821855101

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DRAWING INDEX

VERIFY SCALE	
BAR IS ONE INCH ON ORIGINAL DRAWING.	
DATE	JULY 2011
PROJ	401821
DWG	G-1A
SHEET	2 OF 147

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5

GENERAL SITE NOTES:

- ### **GENERAL YARD PIPING AND UTILITIES NOTES:**

- NDM-LAS:RGS Mesa Facility IDP\ 200-G-00202 401621RD.dgn

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Moapa, Nevada



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MESA EVAPORATION PONDS M5, AND M7
M5:RC-171 WO#9825650201, M7:RC-171 WO#9821855101

**ABBREVIATIONS, GENERAL NOTES
AND CIVIL LEGEND**

VERIFY SCALE	
BAR IS ONE INCH ON ORIGINAL DRAWING.	
0	1"
DATE	JULY 2011
PROJ	401621
DWG	G-2
SHEET	3 OF 147

RECORD DRAWING	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100	101	102	103	104	105	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120	121	122	123	124	125	126	127	128	129	130	131	132	133	134	135	136	137	138	139	140	141	142	143	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158	159	160	161	162	163	164	165	166	167	168	169	170	171	172	173	174	175	176	177	178	179	180	181	182	183	184	185	186	187	188	189	190	191	192	193	194	195	196	197	198	199	200	201	202	203	204	205	206	207	208	209	210	211	212	213	214	215	216	217	218	219	220	221	222	223	224	225	226	227	228	229	230	231	232	233	234	235	236	237	238	239	240	241	242	243	244	245	246	247	248	249	250	251	252	253	254	255	256	257	258	259	260	261	262	263	264	265	266	267	268	269	270	271	272	273	274	275	276	277	278	279	280	281	282	283	284	285	286	287	288	289	290	291	292	293	294	295	296	297	298	299	300	301	302	303	304	305	306	307	308	309	310	311	312	313	314	315	316	317	318	319	320	321	322	323	324	325	326	327	328	329	330	331	332	333	334	335	336	337	338	339	340	341	342	343	344	345	346	347	348	349	350	351	352	353	354	355	356	357	358	359	360	361	362	363	364	365	366	367	368	369	370	371	372	373	374	375	376	377	378	379	380	381	382	383	384	385	386	387	388	389	390	391	392	393	394	395	396	397	398	399	400	401	402	403	404	405	406	407	408	409	410	411	412	413	414	415	416	417	418	419	420	421	422	423	424	425	426	427	428	429	430	431	432	433	434	435	436	437	438	439	440	441	442	443	444	445	446	447	448	449	450	451	452	453	454	455	456	457	458	459	460	461	462	463	464	465
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DOUBLE LINE	SINGLE LINE	
		EXISTING PIPE
		NEW PIPE
		EXISTING PIPE TO BE ABANDONED
		EXISTING PIPE TO BE DEMOLISHED OR SALVAGED AS INDICATED
		WELDED JOINT
		GROOVED END JOINT
		FLANGED JOINT
		PROPRIETARY RESTRAINED JOINT
		BELL & SPIGOT JOINT (LEADED)
		HUB & SPIGOT JOINT (RUBBER GASKET)
		BALL JOINT
		ADAPTER SIDE GROOVED END ADAPTER FLANGE
		FLANGED COUPLING ADAPTER
		FLEXIBLE COUPLING
		METAL BELLOWS EXP JOINT
		ELASTOMER BELLOWS EXP JOINT
		ELBOW UP
		ELBOW DOWN
		TEE UP

		TEE DOWN
		LATERAL UP
		LATERAL DOWN
		CONCENTRIC REDUCER
		ECCENTRIC REDUCER
		REDUCING BUSHING
		UNION
		CAP
		ANCHOR
		ELBOW, 90 DEGREE
		CROSS
		TEE
		ELBOW, 45 DEGREE
		LATERAL

1. ONLY FLANGED END CONNECTIONS ARE SHOWN HERE FOR DOUBLE LINE FITTINGS. FITTINGS WITH OTHER END PATTERNS ARE SHOWN SIMILARLY ON THE CONSTRUCTION DRAWINGS. ALSO SEE PIPING SPECIFICATIONS.
2. SYMBOLS SHOWN HERE FOR SINGLE LINE FITTINGS ARE GENERIC ONLY. REFER TO PIPING SPECIFICATIONS FOR SPECIFIC END CONNECTIONS FOR SINGLE LINE PIPE AND FITTINGS.
3. EXISTING PIPE AND EQUIPMENT IS SHOWN LIGHT-LINED AND/OR SCREENED AND IS NOTED AS EXISTING. NEW PIPING AND EQUIPMENT IS SHOWN HEAVY-LINED.

<u>SINGLE LINE</u>		<u>DOUBLE LINE</u>	
	GATE		
	KNIFE GATE		OR
	BUTTERFLY		OR
	GLOBE		OR
	BALL		OR
	SEATING PORT		
	ECCENTRIC PLUG		OR
	PLUG OR COCK		OR
	NEEDLE		OR
	DIAPHRAGM		OR
	PINCH		OR
	SWING CHECK		OR
	BALL CHECK		OR
	HOSE VALVE (HV-X) OR (V-X) X = NO. IN SPECS		
	SAMPLE		
	MUD		
	PRESSURE RELIEF		
	AIR AND/OR VACUUM RELEASE		
	REGULATED SIDE		
	PRESSURE CONTROL (INTERNAL PILOT)		
	REGULATED SIDE		
	PRESSURE CONTROL (EXTERNAL PILOT)		
	MULTI-PORT VALVE, ARROWS INDICATE FLOW PATTERN. SEATING PORTS ARE IMPLIED BY INDICATED FLOW PATTERN.		
	TELESCOPING SCUM VALVE		

	PNEUMATIC DIAPHRAGM		HYDRAULIC
	PNEUMATIC CYLINDER		MANUAL
	ELECTRIC MOTOR		SOLENOID
			ELECTRO HYDRAULIC

GENERIC PIPING NOTES

1. LAY PIPE TO UNIFORM GRADE BETWEEN INDICATED ELEVATION POINTS.
2. SIZE OF FITTINGS SHOWN ON DRAWINGS SHALL CORRESPOND TO ADJACENT STRAIGHT RUN OF PIPE, UNLESS OTHERWISE INDICATED. TYPE OF JOINT AND FITTING MATERIAL SHALL BE THE SAME AS SHOWN FOR ADJACENT STRAIGHT RUN OF PIPE.
3. IF SHOWN, LOCATION AND NUMBER OF PIPE HANGERS AND PIPE SUPPORTS IS ONLY APPROXIMATE. CONTRACTOR SHALL DESIGN SUPPORTS.
4. ALL JOINTS SHALL BE WATERTIGHT.
5. ALL FLEXIBLE CONNECTORS AND COUPLING ADAPTERS SHALL BE PROVIDED WITH THRUST PROTECTION, UNLESS OTHERWISE NOTED. THRUST PROTECTION SHALL BE ADEQUATE FOR TEST PRESSURES SPECIFIED.
6. SYMBOLS AND LEGENDS SHOWN SHALL BE FOLLOWED THROUGHOUT THE DRAWINGS, WHEREVER APPLICABLE. NOT ALL OF THE VARIOUS PIPING COMPONENTS ARE NECESSARILY USED IN THE PROJECT.
7. ALL BURIED PIPING SPECIFIED TO BE PRESSURE TESTED, EXCEPT FLANGED, WELDED, BUTT-FUSED, OR SCREWED PIPING, SHALL BE PROVIDED WITH THRUST PROTECTION AS SPECIFIED, UNLESS OTHERWISE NOTED.
8. IF SHOWN, NUMBER AND LOCATION OF UNIONS ON DRAWINGS IS ONLY APPROXIMATE. PROVIDE ALL UNIONS NECESSARY TO FACILITATE CONVENIENT REMOVAL OF VALVES AND MECHANICAL EQUIPMENT.
9. WHERE A GROOVED END COUPLING IS SHOWN, IT SHALL BE THE RIGID JOINT TYPE, UNLESS OTHERWISE SPECIFIED. WHERE A FLANGED COUPLING ADAPTER IS SHOWN, A STANDARD FLANGE SHALL BE JOINED TO THE COUPLING ADAPTER.

Revisions Drawn By: CH2M HILL Date: July 2011

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MESA EVAPORATION FONDS M5, AND M7
M5: RC171 WO# 9825650201 M7: RC171 WO# 9821855101

MECHANICAL LEGEND

2485 VILLAGE VIEW DRIVE, SUITE 350
HENDERSON, NEVADA 89074
PHONE: 702-368-6175

LEED GARDNER STATION
Wastewater System
Improvement Projects
Moapa, Nevada

RECORD DRAWING
ED FOR CONSTRUCTION

CHK

BY	APVD
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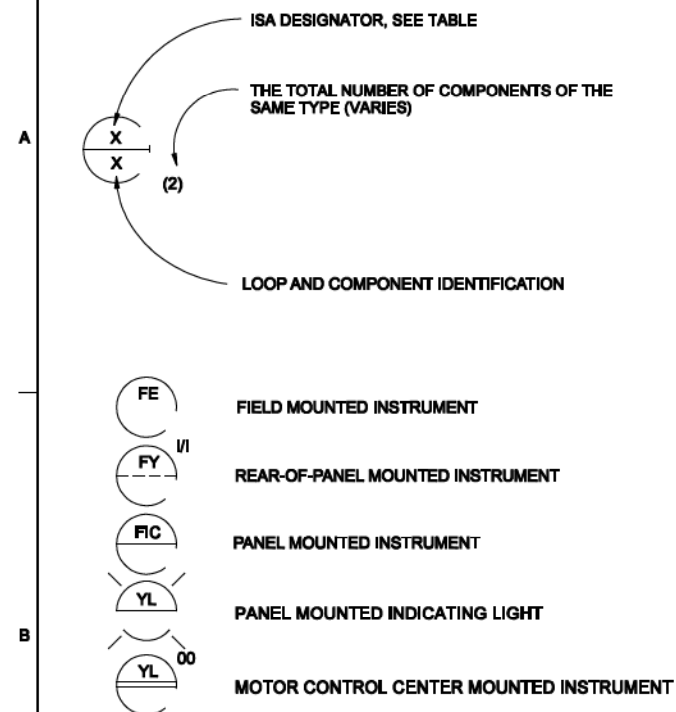
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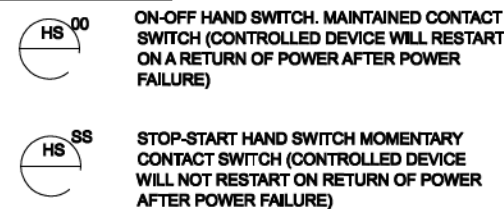
ELECTRICAL LEGEND				ABBREVIATIONS			
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	ABBREVIATIONS	DESCRIPTION
	NEW EQUIPMENT, WIRING AND TEXT		CONVENIENCE RECEPTACLE - DUPLEX UNLESS SPECIFIED OTHERWISE		CONTACT - NORMALLY OPEN WITH NEMA SIZE INDICATED AS APPLICABLE	A	AMMETER, AMPERE
	EXISTING OR OWNER FURNISHED AND CONTRACTOR INSTALLED EQUIPMENT, WIRING AND TEXT IS SHOWN WITH SCREENED LINES		WP- WEATHERPROOF C- CLOCK HANGER TL- TWIST LOCK CRE- CORROSION RESISTANT		CONTACT - NORMALLY CLOSED WITH NEMA SIZE INDICATED AS APPLICABLE	AC	ALTERNATING CURRENT
	EXISTING EQUIPMENT, CONDUIT AND WIRING TO BE REMOVED		CONVENIENCE RECEPTACLE - WITH PANEL NUMBER AND CIRCUIT NUMBER IN PARENTHESIS.		TIME DELAY RELAY CONTACT (TIME ACTION INDICATED)	AF	AMPERE FRAME
	CONNECTION POINT TO DEVICES UNDER THIS CONTRACT AND SPECIFIED IN DIVISIONS OTHER THAN 16. WIRING, RACEWAYS AND CONNECTIONS SHALL BE PROVIDED UNDER THIS CONTRACT AS SPECIFIED UNDER DIVISION 16.		CONVENIENCE RECEPTACLE, PEDESTAL, DUPLEX SINGLE FACE UNLESS INDICATED OTHERWISE		REMOTE DEVICE	AFD	ADJUSTABLE FREQUENCY DRIVE
	MAJOR ELECTRICAL COMPONENT OR DEVICE - NAME OR IDENTIFYING SYMBOL AS SHOWN.		RECEPTACLE - 240V, 1 PH, AMPERAGE INDICATED		RELAY COIL: CR= CONTROL RELAY, TDR=TIME DELAY RELAY	AFF	ABOVE FINISHED FLOOR
	BRANCH CIRCUIT PANELBOARD		RECEPTACLE, SPECIAL PURPOSE - AMPERAGE AS INDICATED		OVERLOAD RELAY HEATER	AS	AMPERE SENSOR
	UNIT HEATER NO.1 SEE SCHEDULE		MULTI OUTLET ASSEMBLY		MAGNETIC STARTER WITH NEMA SIZE INDICATED	ASU	AIR SUPPLY UNIT
	TELEPHONE TERMINAL CABINET		RECEPTACLE - 4-PLEX		CIRCUIT BREAKER, MAGNETIC TRIP ONLY, FRAME SIZE SHOWN, 3 POLE UNLESS INDICATED OTHERWISE.	ATCS	AUTOMATIC TRANSFER CONTROL SYSTEM
	TERMINAL JUNCTION BOX		TELEPHONE RECEPTACLE (OUTLET BOX ONLY) FLUSH IN FLOOR		CIRCUIT BREAKER, THERMAL MAGNETIC TRIP SHOWN, 3 POLE UNLESS INDICATED OTHERWISE.	AT	AUTOMATIC TRANSFER SW AMP TRIP
	MOTOR, SQUIRREL CAGE INDUCTION - HORSEPOWER INDICATED		TELEPHONE RECEPTACLE (OUTLET BOX ONLY)		CIRCUIT BREAKER WITH CURRENT LIMITING FUSES, TRIP AND FUSE RATING INDICATED, 3 POLE UNLESS INDICATED OTHERWISE.	BO	BOILER
	LUMINAIRE		GENERAL CONTROL OR WIRING DEVICE. NEMA 4 ENCLOSURE UNLESS INDICATED OTHERWISE. LETTER SYMBOLS OR ABBREVIATIONS INDICATE TYPE OF DEVICE.		FUSED SWITCH, SWITCH AND FUSE CURRENT RATING INDICATED, 3 POLE UNLESS INDICATED OTHERWISE.	BCU	BARE COPPER BREAKER
	LUMINAIRE AND POLE		CONTROL STATION, NEMA 4 ENCLOSURE UNLESS INDICATED OTHERWISE.		SWITCH - CURRENT RATING INDICATED, 3 POLE UNLESS INDICATED OTHERWISE.	BRKR	BREAKER
	WALL MOUNTED LUMINAIRE		NONFUSED DISCONNECT SWITCH, SIZE INDICATED, 3 POLE UNLESS INDICATED OTHERWISE, NEMA 12 ENCLOSURE, WP = WEATHERPROOF (NEMA 4X)		DRAWOUT AIR CIRCUIT BREAKER, LOW VOLTAGE	C	CONDUIT, CONTACTOR
	FLOOD LIGHTS		FUSED DISCONNECT SWITCH, SIZE INDICATED (60/40, 80 = SWITCH RATING: 40 = FUSE RATING) 3 POLE UNLESS INDICATED OTHERWISE, NEMA 12 ENCLOSURE, WP = WEATHERPROOF (NEMA 4X)		DRAWOUT AIR CIRCUIT BREAKER, MEDIUM VOLTAGE	CB	CIRCUIT BREAKER
	LUMINAIRE W/EMERGENCY BATTERY PACK		CONTACTOR, MAGNETIC, NEMA SIZE INDICATED, NEMA 12 ENCLOSURE, UNLESS INDICATED OTHERWISE.		DRAWOUT FUSED SWITCH, MEDIUM VOLTAGE	CC	CIRCUIT CABLE
	EMERGENCY DC LIGHT UNIT		LIGHTING CONTACTOR, CURRENT RATING INDICATED, NEMA 12 ENCLOSURE UNLESS INDICATED OTHERWISE. SEE CONTROL DIAGRAM FOR NUMBER OF POLES.		LIGHTNING ARRESTER	CKT	CIRCUIT COMMUNICATIONS
	HOME RUN - DESTINATION SHOWN		STARTER MAGNETIC NEMA SIZE INDICATED, NEMA 12 ENCLOSURE UNLESS INDICATED OTHERWISE. SEE CONTROL DIAGRAM.		FUSE	COMM	COMMUNICATIONS
	EXPOSED CONDUIT AND CONDUCTORS*		COMBINATION (FUSE OR CIRCUIT BREAKER AS INDICATED) MAGNETIC STARTER, NEMA SIZE INDICATED, NEMA 12 ENCLOSURE UNLESS INDICATED OTHERWISE. SEE CONTROL DIAGRAM.		CAPACITOR - KVAR INDICATED	COND	CONDUCTOR
	CONCEALED CONDUIT AND CONDUCTORS*		TRANSFORMER, SECONDARY VOLTAGES, PHASE AND RATING INDICATED AS APPLICABLE		METER WITH SWITCH - SCALE RANGE SHOWN	CONT	CONTINUED
			PICK-UP SETTING		GROUND	CPT	CONTROL POWER XFMR
	CROSSHATCHES WITH BAR INDICATE #10 CONDUCTOR. SIZE CONDUIT ACCORDING TO SPECIFICATIONS & APPLICABLE CODES.		TIME CURRENT CHARACTERISTIC		GROUND FAULT RELAY WITH C.T.	CR	CONTROL RELAY
	CONCRETE ENCASED DUCT BANK		GROUND FAULT RELAY WITH C.T.			CRS	COATED RIGID STEEL CONDUIT
	CONDUIT DOWN					CS	CONTROL STATION
	CONDUIT UP					CT	CURRENT TRANSFORMER
	SMALL LETTER SUBSCRIPT AT SWITCH AND LUMINAIRE INDICATES SWITCHING. SUBSCRIPT NUMBER AT LUMINAIRE INDICATES CIRCUIT IN PANELBOARD.					CU	COPPER
	WALL SWITCH:					DC	DIRECT CURRENT
	DOUBLE POLE					DCU	DISTRIBUTED CONTROL UNIT
	THREE WAY					DIV	DIVISION
	FOUR WAY					DPI	DIGITAL PROCESS INDICATOR
	WEATHERPROOF					E	EXISTING
	MANUAL MOTOR STARTER SWITCH					ECP	ENVIRONMENT CONTROL PNL
	SPRING WOUND TIME SWITCH					EF	EXHAUST FAN
	THERMOSTAT					EMER	EMERGENCY
	TERMINAL POLE					ETM	ELAPSED TIME METER
	HAND HOLE					FACP	FIRE ALARM CONTROL PANEL
						FDR	FEEDER
						F, FU	FUSE
						FLA	FULL LOAD AMPS
						FLR	FLOOR
						FLUOR	FLUORESCENT
						G	GREEN GROUND, GROUND
						GALV	GALVANIZED
						GFI	GROUND FAULT INTERRUPTER
						GFR	GROUND FAULT RELAY
						H	HIGH SPEED
						HH	HANDHOLE
						HID	HIGH INTENSITY DISCHARGE
						HPS	HIGH PRESSURE SODIUM
						HV	HIGH VOLTAGE
						HVAC	HEATING, VENTILATING & AIR CONDITIONING
						IC	INTERRUPTING CAPACITY
						I & C	INSTRUMENTATION AND CONTROL
						ICL	INDUSTRIAL CONTROL LINKS
						INST	INSTANTANEOUS
						INST	INSTRUMENTATION
						J, J-BOX	JUNCTION BOX
						K	KEY INTERLOCK
						L	LIGHTING CONTACTOR, LOW SPEED
						LA	LIGHTNING ARRESTER
						LC	LOAD CENTER
						LDRS	LEAK DETECTION RECOVERY SYSTEM
						LT	LEVEL INDICATE / TRANSMIT
						LP	LIGHTING PANELBOARD
						LS	LIMIT SWITCH
						LTG	LIGHTING
						LV	LOW VOLTAGE
						M	MAGNETIC CONTACTOR COIL
						MCC	MOTOR CONTROL CENTER
						MD	MOTORIZED DAMPER
						MEP	MESA EVAPORATION PONDS
						MERC	MERCURY VAPOR
						MFR	MANUFACTURER
						MH	MANHOLE
						MMP	MECHANICAL MOUNTING PANEL
						MO	MOTOR OPERATOR
						MS	MOTOR STARTER
						MSC	MANUFACTURER SUPPLIED CABLE
						MT	MOUNT
						MTD	MOUNTED
						MTG	MOUNTING
						MTS	MANUAL TRANSFER SWITCH
						MX	MIXER
				<			

INSTRUMENTATION IDENTIFICATION

EXAMPLE SYMBOLS



SPECIAL CASES



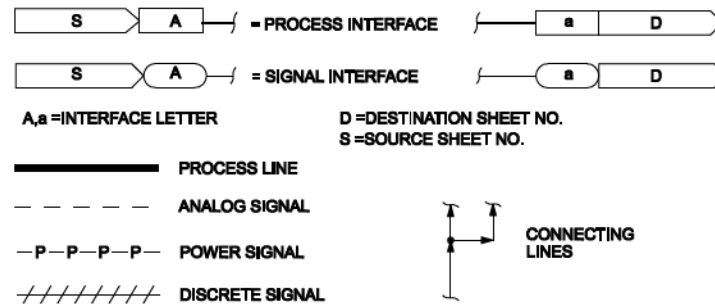
INSTRUMENT IDENTIFICATION LETTERS TABLE

LETTER	FIRST LETTER (S)		SUCCEEDING LETTERS		
	PROCESS OR INITIATING VARIABLE	MODIFIER	READOUT OR PASSIVE FUNCTION	OUTPUT FUNCTION	MODIFIER
A	ANALYSIS (+)		ALARM		
B	BURNER FLAME		USERS CHOICE (+)	USERS CHOICE (+)	USERS CHOICE (+)
C	CONDUCTIVITY			CONTROL	
D	DENSITY (S.G.)	DIFFERENTIAL			
E	VOLTAGE		PRIMARY ELEMENT		
F	FLOW RATE	RATIO			
G	GAUGE		GLASS	GATE	
H	HAND (MANUAL)				HIGH
I	CURRENT		INDICATE		
J	POWER	SCAN			
K	TIME OR SCHEDULE			CONTROL STATION	
L	LEVEL		LIGHT (PILOT)		LOW
M	MOTION				MIDDLE
N	USERS CHOICE (+)		USERS CHOICE (+)	USERS CHOICE (+)	USERS CHOICE (+)
O	USERS CHOICE (+)		ORIFICE		
P	PRESSURE (OR VACUUM)		POINT (TEST CONNECTION)		
Q	QUANTITY	INTEGRATE	INTEGRATE		
R			RECORD OR PRINT		
S	SPEED OR FREQUENCY	SAFETY		SWITCH	
T	TEMPERATURE			TRANSMIT	
U	MULTIVARIABLE (+)		MULTIFUNCTION	MULTIFUNCTION (+)	MULTIFUNCTION (+)
V	VISCOSITY			VALVE OR DAMPER	
W	WEIGHT OR FORCE		WELL		
X	UNCLASSIFIED (+)		UNCLASSIFIED (+)	UNCLASSIFIED (+)	UNCLASSIFIED (+)
Y	EVENT		RELAY OR COMPUTE (+)		
Z	POSITION			DRIVE, ACTUATE OR UNCLASSIFIED FINAL CONTROL ELEMENT	

TABLE BASED ON THE INSTRUMENTATION, SYSTEMS, AND AUTOMATION SOCIETY (ISA) STANDARD.

(+) WHEN USED, EXPLANATION IS SHOWN ADJACENT TO INSTRUMENT SYMBOL. SEE ABBREVIATIONS.

INTERFACE SYMBOLS & LINE LEGEND

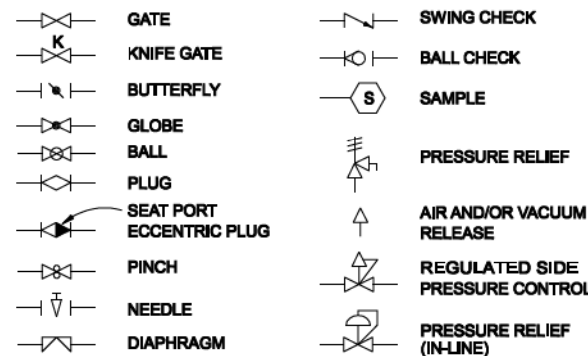


SELF CONTAINED VALVE & EQUIPMENT TAG NUMBERS

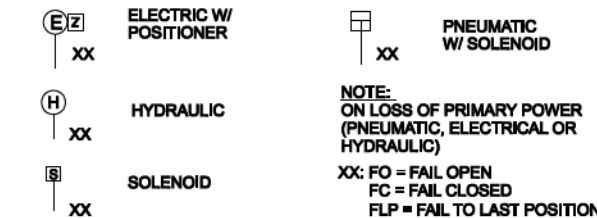
D:	ARV	= AIR RELEASE VALVE
	ASV	= ANTI-SYPHON VALVE
	AVRV	= AIR AND VACUUM RELEASE VALVE
	E	= INJECTOR
	FCV	= FLOW CONTROL VALVE
	G	= GATE
	LCV	= LEVEL CONTROL VALVE
	M	= MECHANICAL EQUIPMENT
	MX	= MIXER
	P	= PUMP
	PCV	= PRESSURE CONTROL VALVE
	PSE	= RUPTURE DISK
	PSV	= PRESSURE RELIEF VALVE
	T	= TANK
	TCV	= TEMPERATURE CONTROL VALVE

X = LOOP IDENTIFICATION

VALVE SYMBOLS



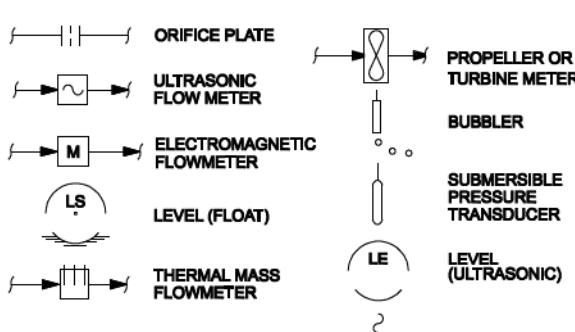
ACTUATOR SYMBOLS



GATE SYMBOLS

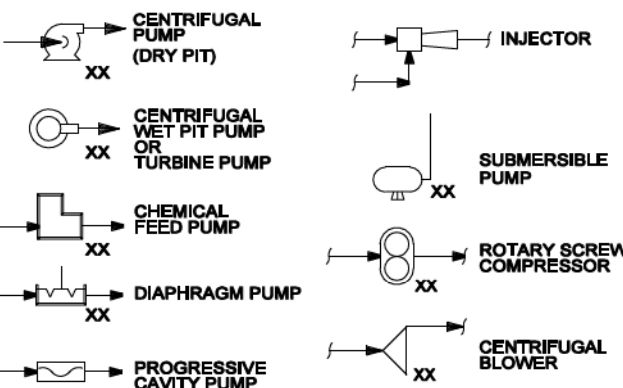


PRIMARY ELEMENT SYMBOLS

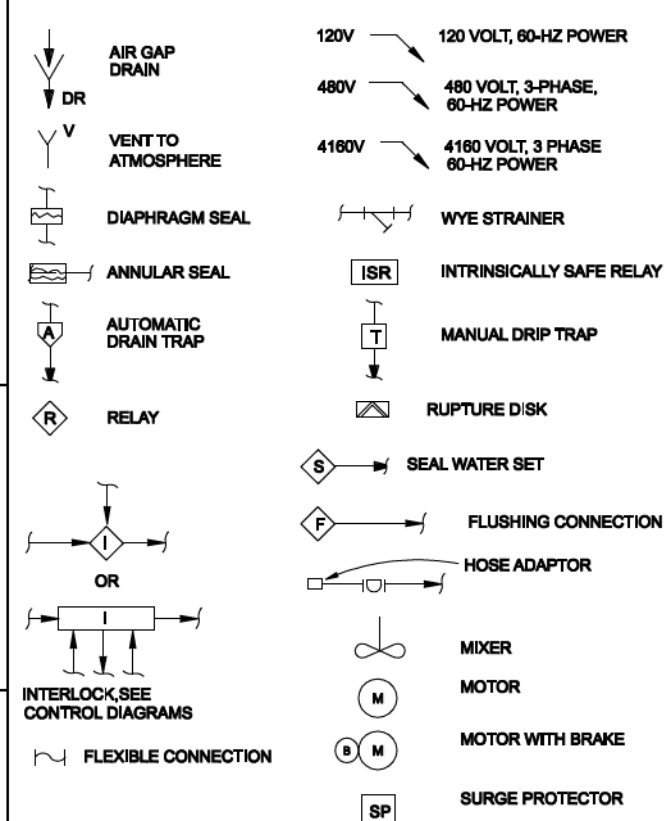


PUMP SYMBOLS

NOTE: XX: AS ADJUSTABLE SPEED
CS-1 CONSTANT SPEED (SINGLE SPEED)
CS-2 CONSTANT SPEED (TWO SPEED)



MISCELLANEOUS SYMBOLS



ABBREVIATIONS

ACK	ACKNOWLEDGE	OCR	OPEN-CLOSE-REMOTE
AFD	ADJUSTABLE FREQUENCY DRIVE	OCA	OPEN-CLOSE-AUTO
CS	CONSTANT SPEED	OO	ON-OFF
DIO	DISTRIBUTED INPUT/OUTPUT	OOA	ON-OFF-AUTO
DSC	DISTRIBUTED CONTROL SYSTEM	OOR	ON-OFF-REMOTE
EFPS	EFFLUENT FORWARDING PUMP STATION	OSC	OPEN-STOP-CLOSE
EMERG	EMERGENCY	REV	REVERSE
FWD	FORWARD	RSL	RAISE-STOP-LOWER
GW	GROUNDWATER	PLC	PROGRAMMABLE LOGIC CONTROLLER
HOA	HAND-OFF-AUTO	QTY	QUANTITY
H ₂ O ₂	HYDROGEN PEROXIDE	RM	RAPID MIX
I/O	INPUT / OUTPUT	RPA	RISING POST ASSEMBLY
LCP	LOCAL CONTROL PANEL	SSRV	SOLID STATE REDUCED VOLTAGE
LDRS	LEAK DETECTION RECOVERY SYSTEM	SS	START-STOP
LOR	LOCAL-OFF-REMOTE	SW	SURFACE WATER
LR	LOCAL-REMOTE	TBD	TO BE DETERMINED
MA	MANUAL-AUTO	TYP	TYPICAL
MCC	MOTOR CONTROL CENTER		
MFR	MANUFACTURER		
MLD	MOTOR LEAKAGE DETECTOR		
MSC	MANUFACTURER SUPPLIED CABLE		
MX	MIXER		
OC	OPEN-CLOSE (D)		

GENERAL NOTES

- THIS A STANDARD LEGEND, THEREFORE NOT ALL OF THIS INFORMATION MAY BE USED ON THIS PROJECT.
- FOR FLOW STREAM IDENTIFICATION, SEE MECHANICAL LEGEND.

RECORD DRAWINGS

Revisions Drawn By: CH2M HILL Date: July 2011

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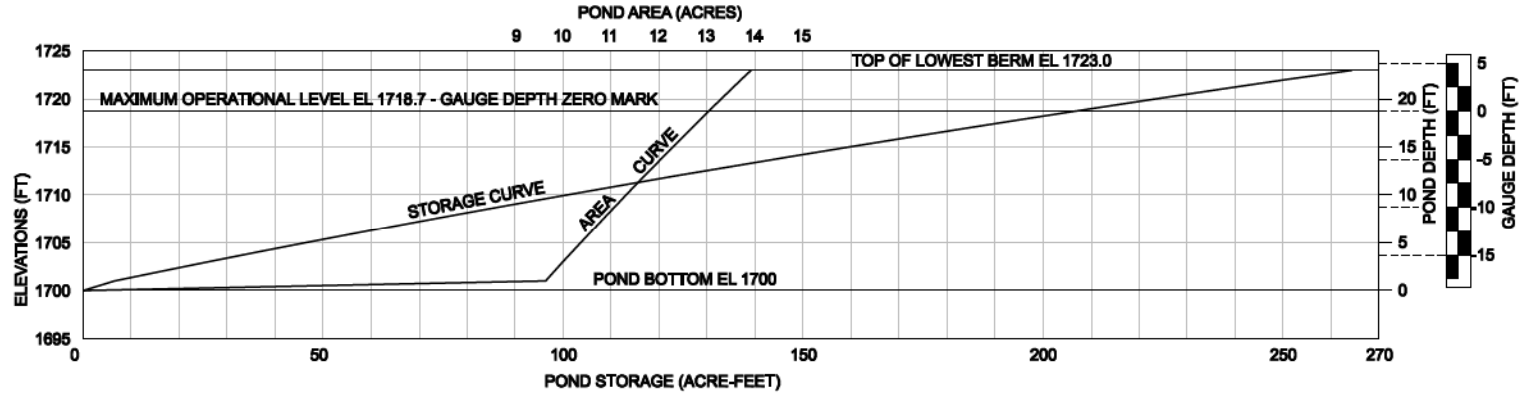
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PHONE: 702-398-6175

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Wastewater System
Improvement Projects
Mojave, Nevada

MESA EVAPORATION PONDS M5 AND M7
M5: RC171 WOF# 9825650201 M7: RC171 WOF# 9821855101

VERIFY SCALE	
BAR IS ONE INCH ON ORIGINAL DRAWING	
DATE	JULY 2011
PROJ	401821
DWG	G-6
SHEET	7 OF 147

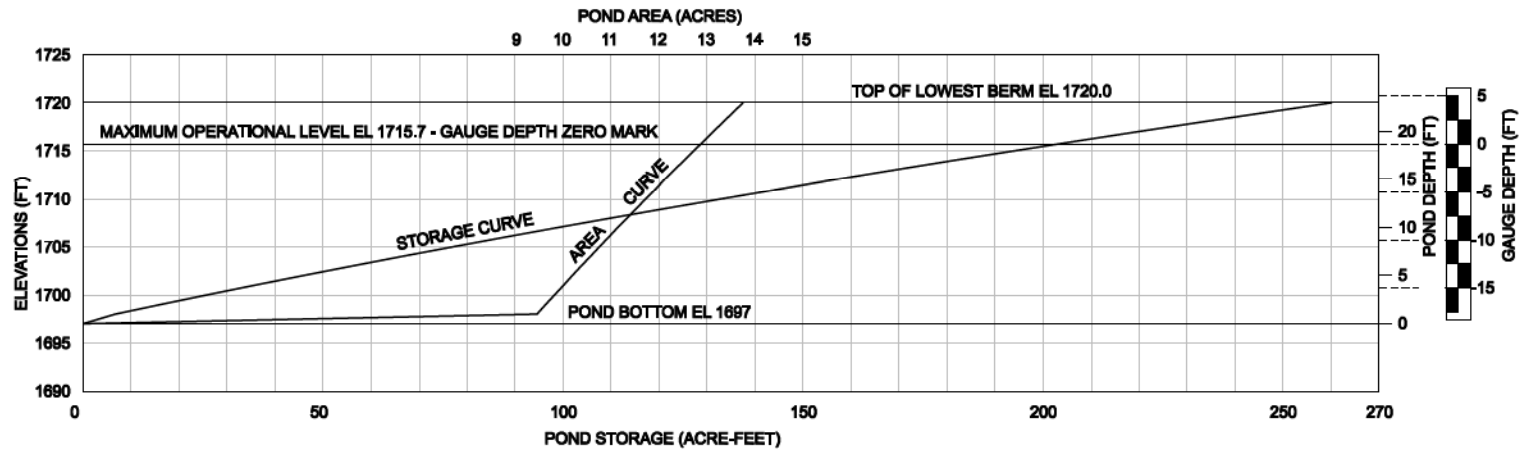
A



POND M7 STORAGE AND AREA CURVES

NTS

B



POND M5 STORAGE AND AREA CURVES

NTS

C

D

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MAX OPERATION LEVEL

POND M5			
Pond Depth (Ft)	EL	Area (Acres)	Cumulative Volume (AF)
0	1697	0	0
1	1698	9.45	6.61
2	1699	9.63	16.11
3	1700	9.82	25.79
4	1701	10.00	35.66
5	1702	10.19	45.72
6	1703	10.37	55.96
7	1704	10.56	66.39
8	1705	10.75	77.02
9	1706	10.94	87.83
10	1707	11.14	98.84
11	1708	11.33	110.05
12	1709	11.52	121.45
13	1710	11.72	133.04
14	1711	11.92	144.84
15	1712	12.12	156.84
16	1713	12.32	169.03
17	1714	12.52	181.43
18	1715	12.72	194.04
18.7	1715.7	12.86	202.99
19	1716	12.92	206.85
20	1717	13.13	219.86
21	1718	13.33	233.09
22	1719	13.54	246.52
23	1720	13.75	260.17

MAX OPERATION LEVEL

POND M7			
Pond Depth (Ft)	EL	Area (Acres)	Cumulative Volume (AF)
0	1700	0	0
1	1701	9.63	6.49
2	1702	9.81	16.21
3	1703	10.00	26.12
4	1704	10.18	36.20
5	1705	10.36	46.48
6	1706	10.55	56.93
7	1707	10.74	67.58
8	1708	10.93	78.41
9	1709	11.12	89.43
10	1710	11.31	100.64
11	1711	11.50	112.04
12	1712	11.69	123.64
13	1713	11.89	135.43
14	1714	12.09	147.42
15	1715	12.28	159.60
16	1716	12.48	171.99
17	1717	12.68	184.57
18	1718	12.89	197.35
18.7	1718.7	13.03	206.42
19	1719	13.09	210.34
20	1720	13.29	223.53
21	1721	13.50	236.93
22	1722	13.71	250.53
23	1723	13.91	264.34

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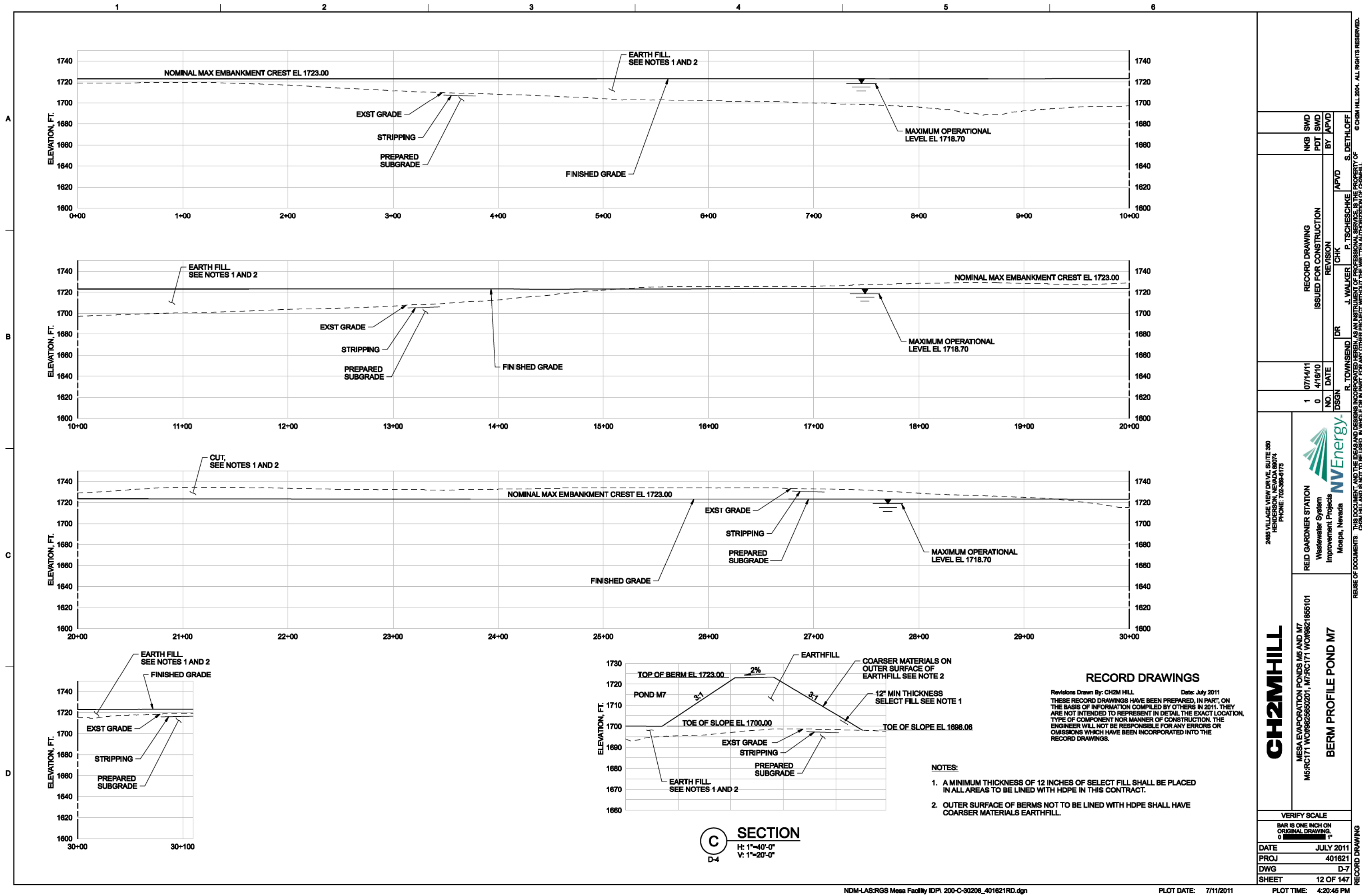
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NVEnergy

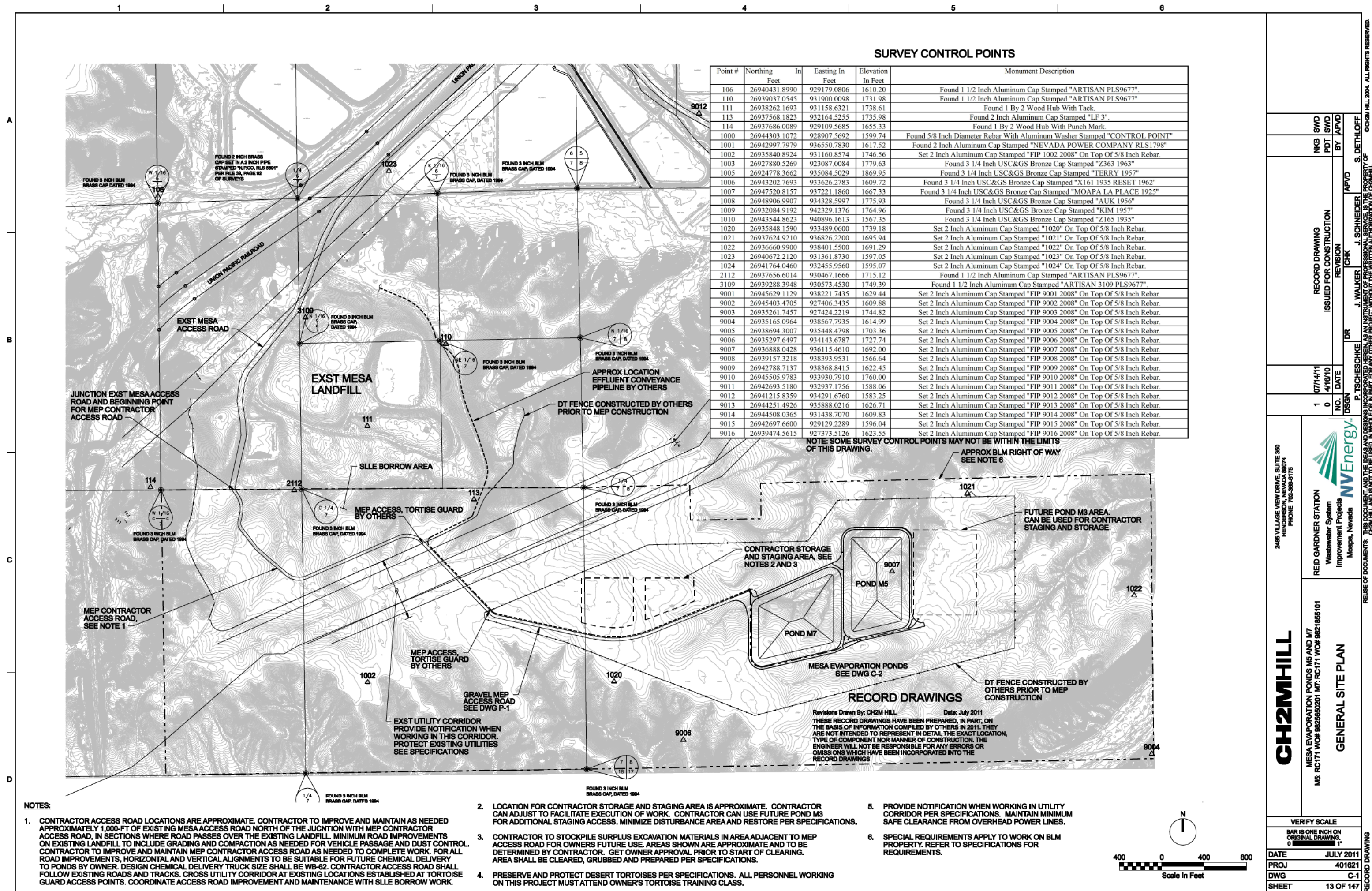
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M5:RC1711 WC#9625650201, M7:RC1711 WC#9621865101
ELEVATION/CAPACITY
AND ELEVATION/AREA CURVES

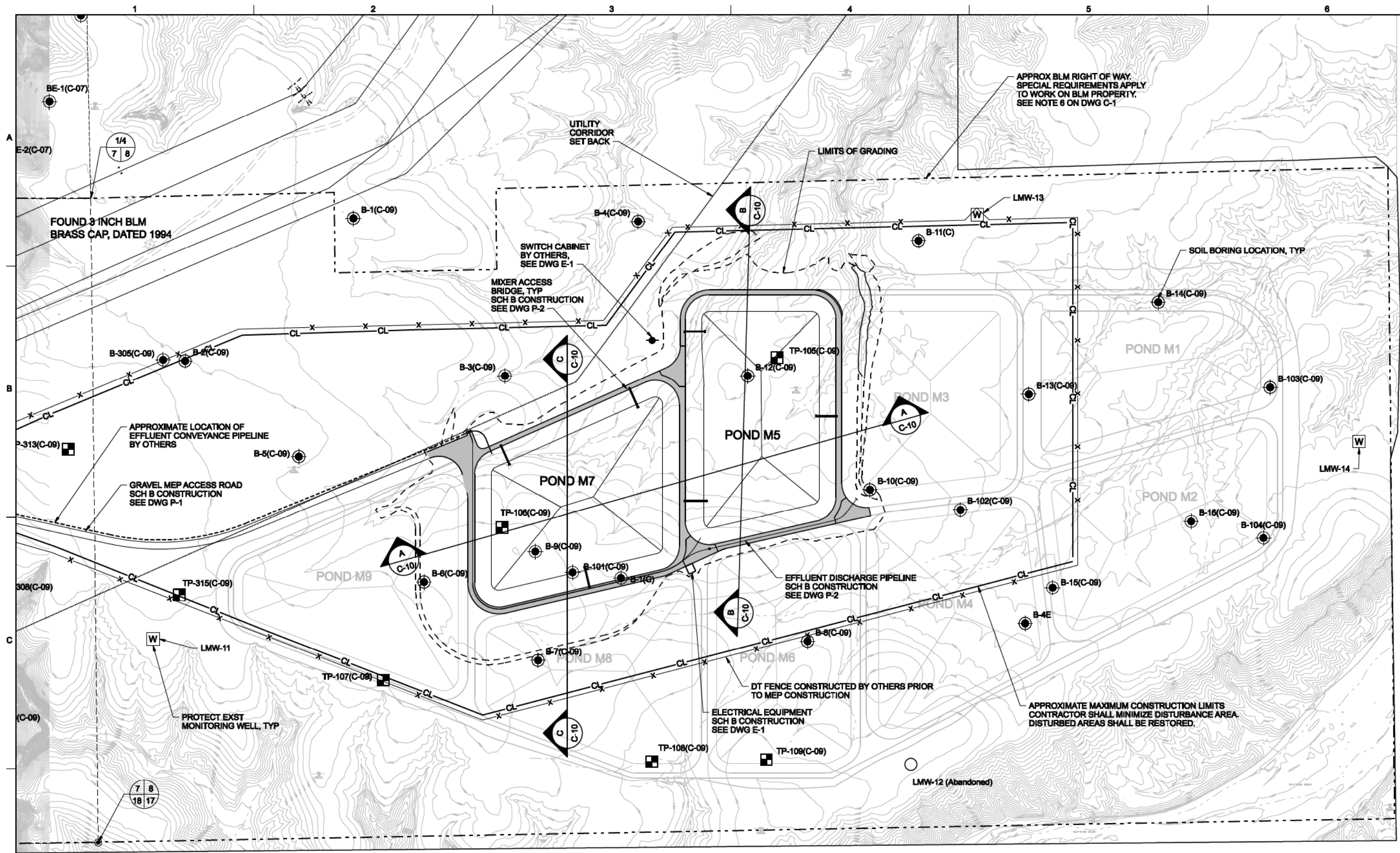
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SHEET	8 OF 147

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FOUND 3 INCH BLM
BRASS CAP, DATED 1994

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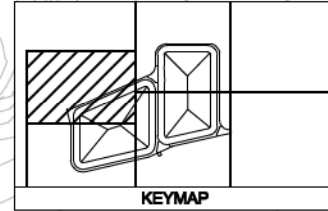
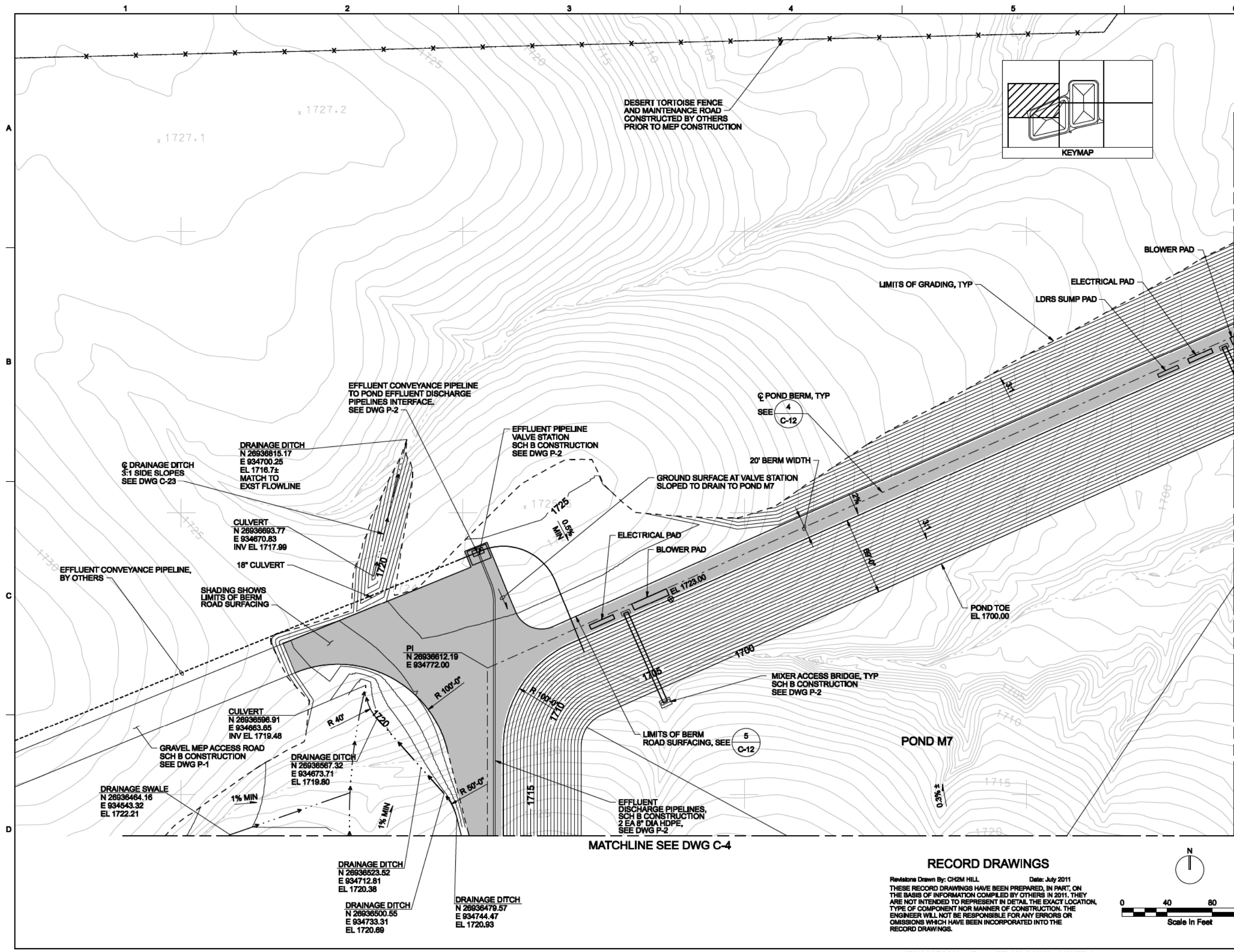
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Scale in Feet

0 100 200 300 400 500 600

Scale in Feet

CH2MHILL MESA EVAPORATION PONDS M5 AND M7 M5: RC171 WOF# 9825550201 M7: RC171 WOF# 9821855101 GENERAL POND SITE PLAN		REID GARDNER STATION Wastewater System Improvement Projects NVEnergy Mesquite, Nevada		2485 VILLAGE VIEW DRIVE, SUITE 350 HENDERSON, NEVADA 89074 PHONE: 702-398-6175		RECORD DRAWING DRAWING REVISION - MIXER ACCESS BRIDGES ISSUED FOR CONSTRUCTION REVISION NO. DATE 2 07/14/11 1 9/7/10 0 4/16/10		NKB SWD PDT SWD PDT SWD BY APVD		S. DETHLOFF	
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DATE		JULY 2011									
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DWG		C-2									
SHEET		14 OF 147									
PLOT TIME: 4:20:05 PM											
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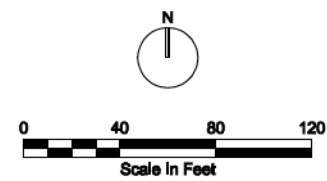
MATCHLINE SEE DWG C-5

MATCHLINE SEE DWG C-6

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1 07/14/11
NO. 0
DATE 4/18/10
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REVISION
BY APVD
S. DETHLOFF
NKB SWD
PDT SWD

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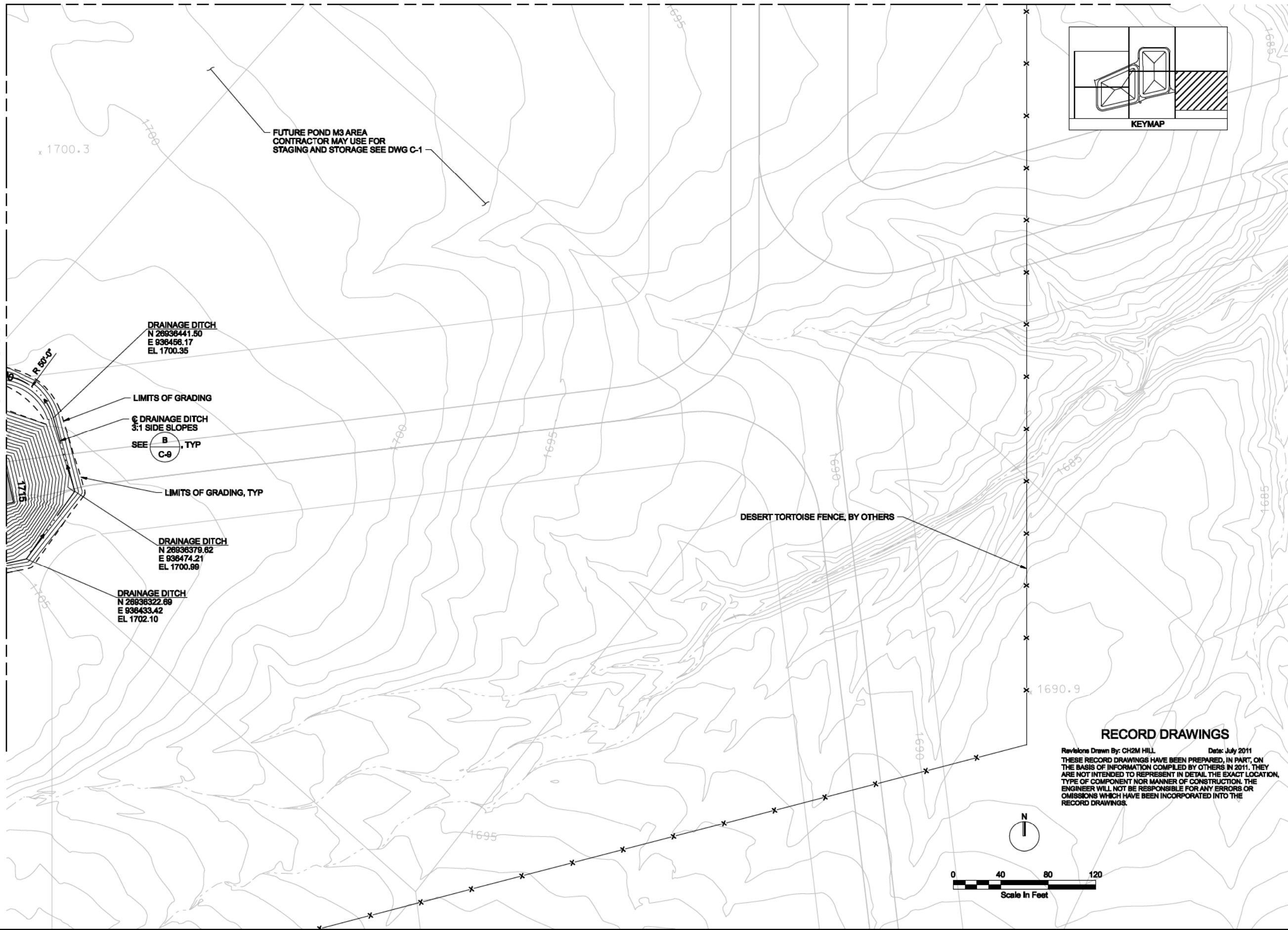
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PLOT TIME: 8:58:39 AM

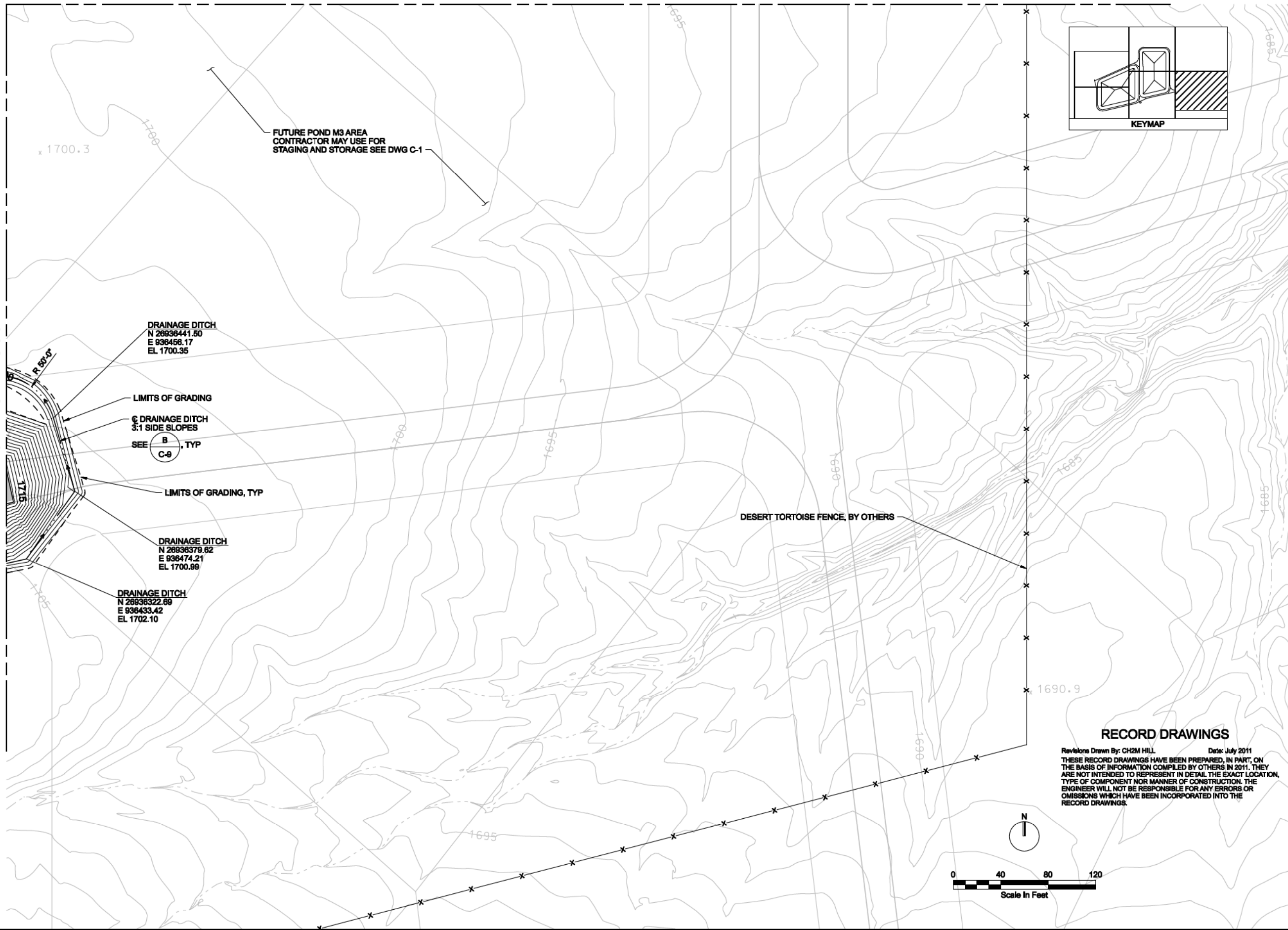
MATCHLINE SEE DWG C-5

MATCHLINE SEE DWG C-7



MATCHLINE SEE DWG C-5

MATCHLINE SEE DWG C-7



CH2MHILL

2485 VILLAGE VIEW DRIVE, SUITE 350
HENDERSON, NEVADA 89074
PHONE: 702-398-6175

MESA EVAPORATION PONDS M5 AND M7
M5:RC1711 WCR6626550201, M7:RC1711 WCR6621855101

REID GARDNER STATION
Wastewater System
Improvement Projects
Mojave, Nevada

VERIFY SCALE
BAR IS ONE INCH ON
ORIGINAL DRAWING.
0 1"

DATE JULY 2011
PROJ 401621
DWG C-8
SHEET 20 OF 147

RECORD DRAWING
ISSUED FOR CONSTRUCTION
1 07/14/11
0 4/16/10
NO. DATE
DGN

DR
R. TOWNSEND
CHK
J. WALKER
APVD
P. TSCHESCHKE
S. DETHLOFF

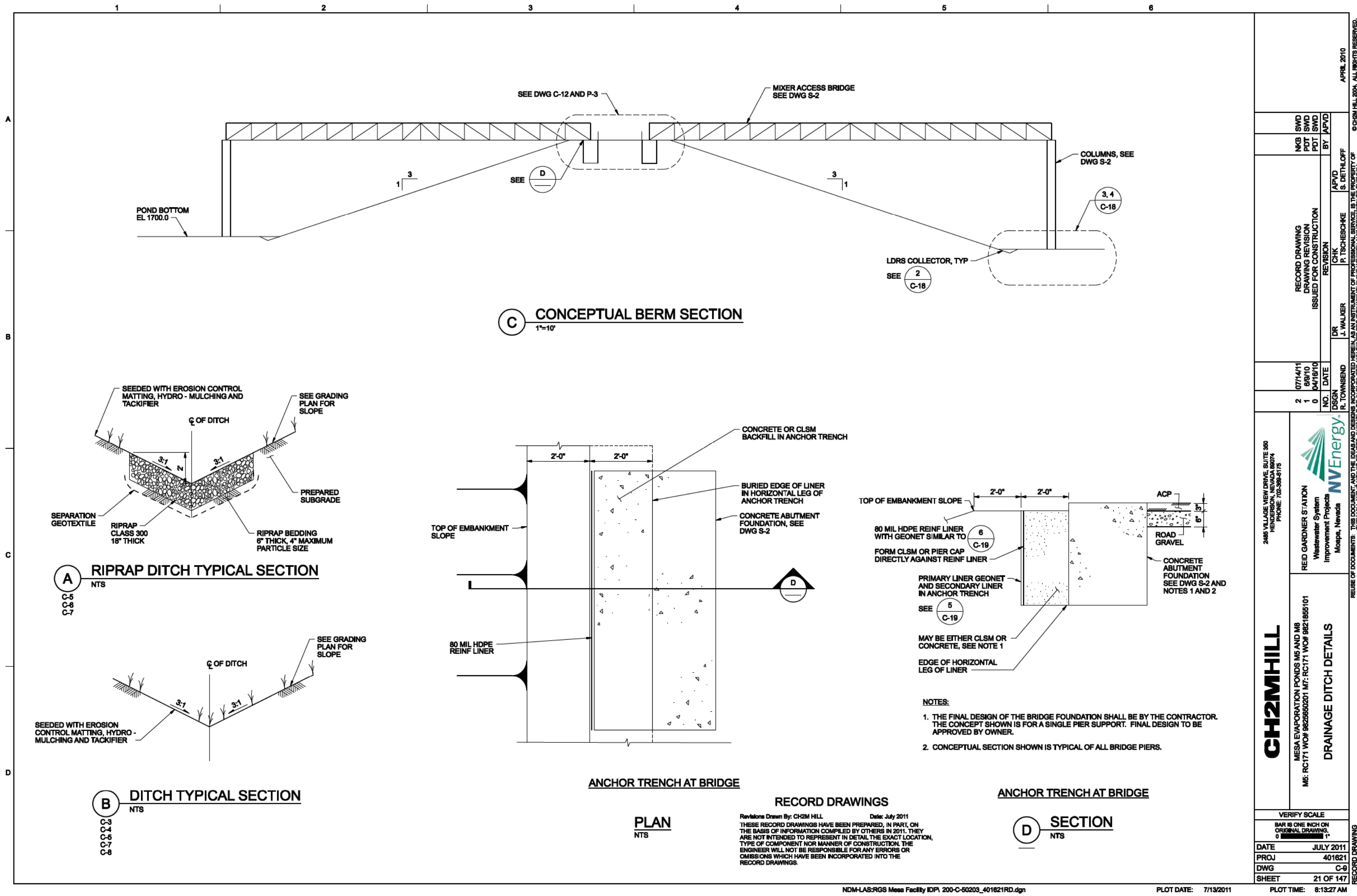
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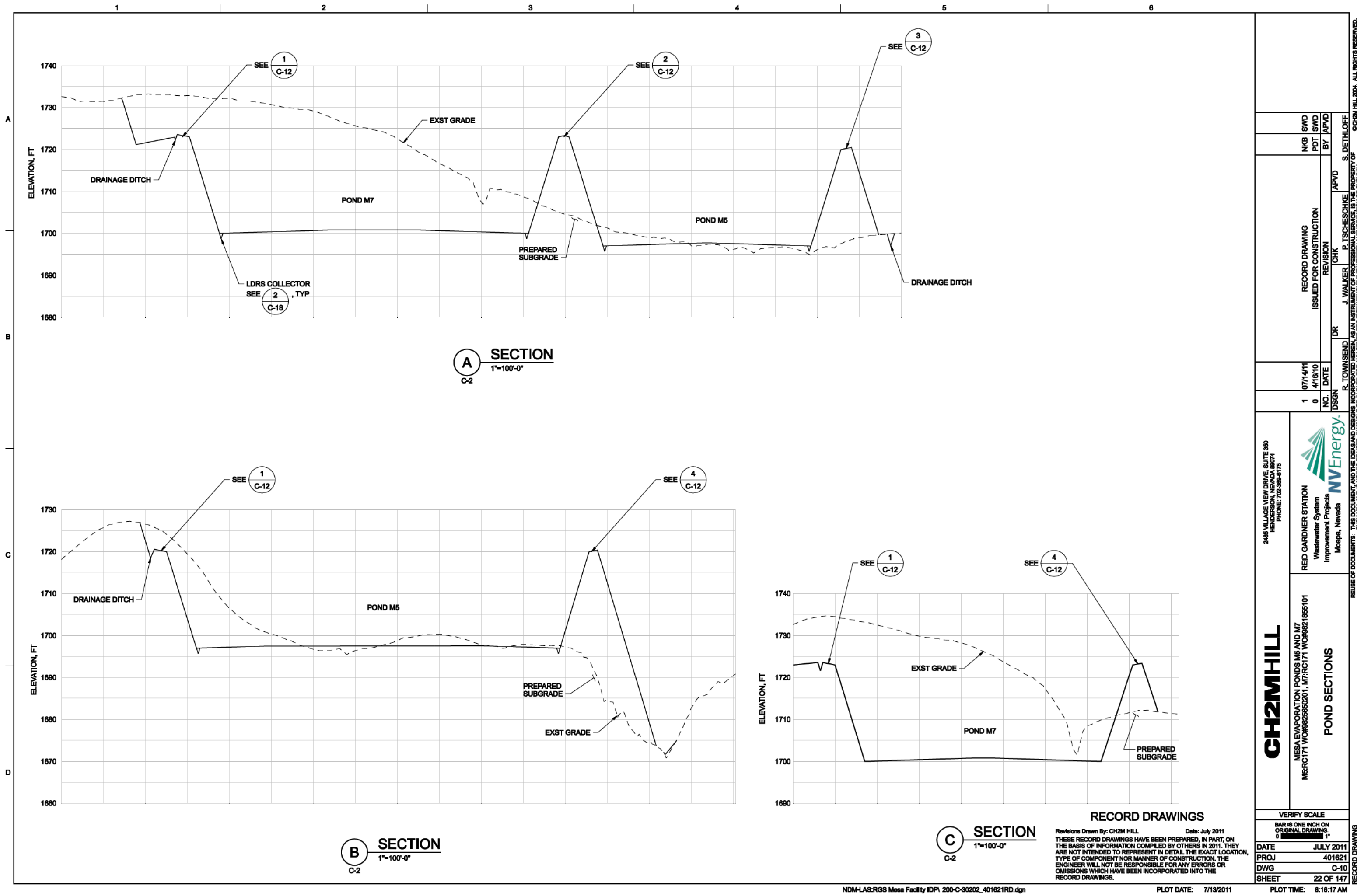
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NDM-LAS:RGS Mesa Facility IDP1_200-C-20207_401621RD.dgn

PLOT DATE: 7/12/2011

PLOT TIME: 9:13:57 AM





2485 VILLAGE VIEW DRIVE, SUITE 350
HENDERSON, NEVADA 89074
PHONE: 702-398-6175

REID GARDNER STATION
Wastewater System
Improvement Projects
Mesquite, Nevada

CH2MHILL

MESA EVAPORATION PONDS M5 AND M7
M5:RC171 W0#9625660201, M7:RC171 W0#9621855101

VERIFY SCALE
BAR IS ONE INCH ON
ORIGINAL DRAWING
0 1"

DATE	JULY 2011
PROJ	401821
DWG	C-10
SHEET	22 OF 147

RECORD DRAWING

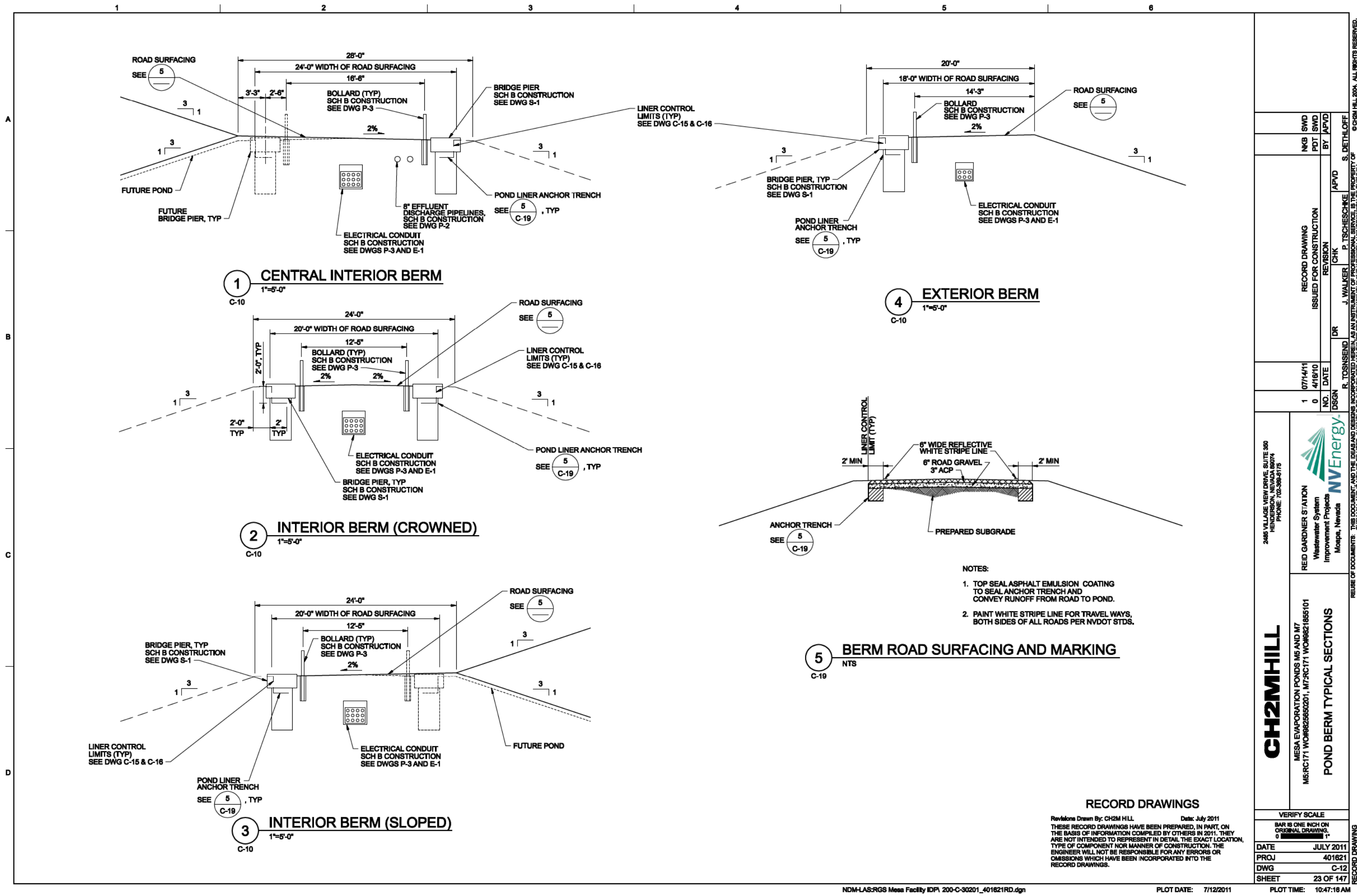
NO. 1
DATE 07/14/11
NO. 0
DATE 4/16/10

REVISION
ISSUED FOR CONSTRUCTION

DR J. WALKER
CHK P. TSCHESCHKE
APVD S. DETHLOFF

REID GARDNER STATION
Wastewater System
Improvement Projects
Mesquite, Nevada

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HENDERSON, NEVADA 89074
PHONE: 702-398-6175

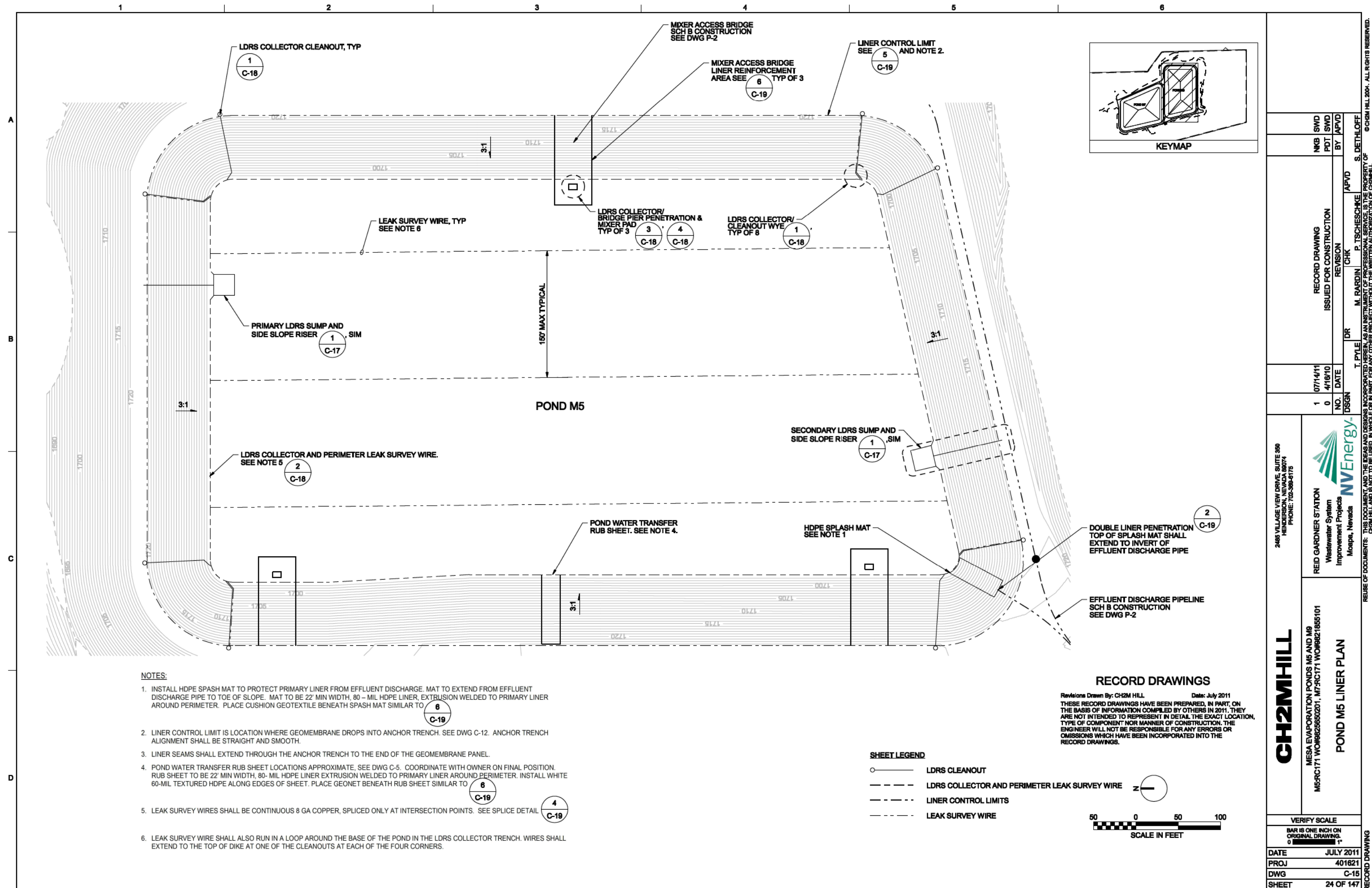
REID GARDNER STATION
Wastewater System
Improvement Projects
Mojave, Nevada

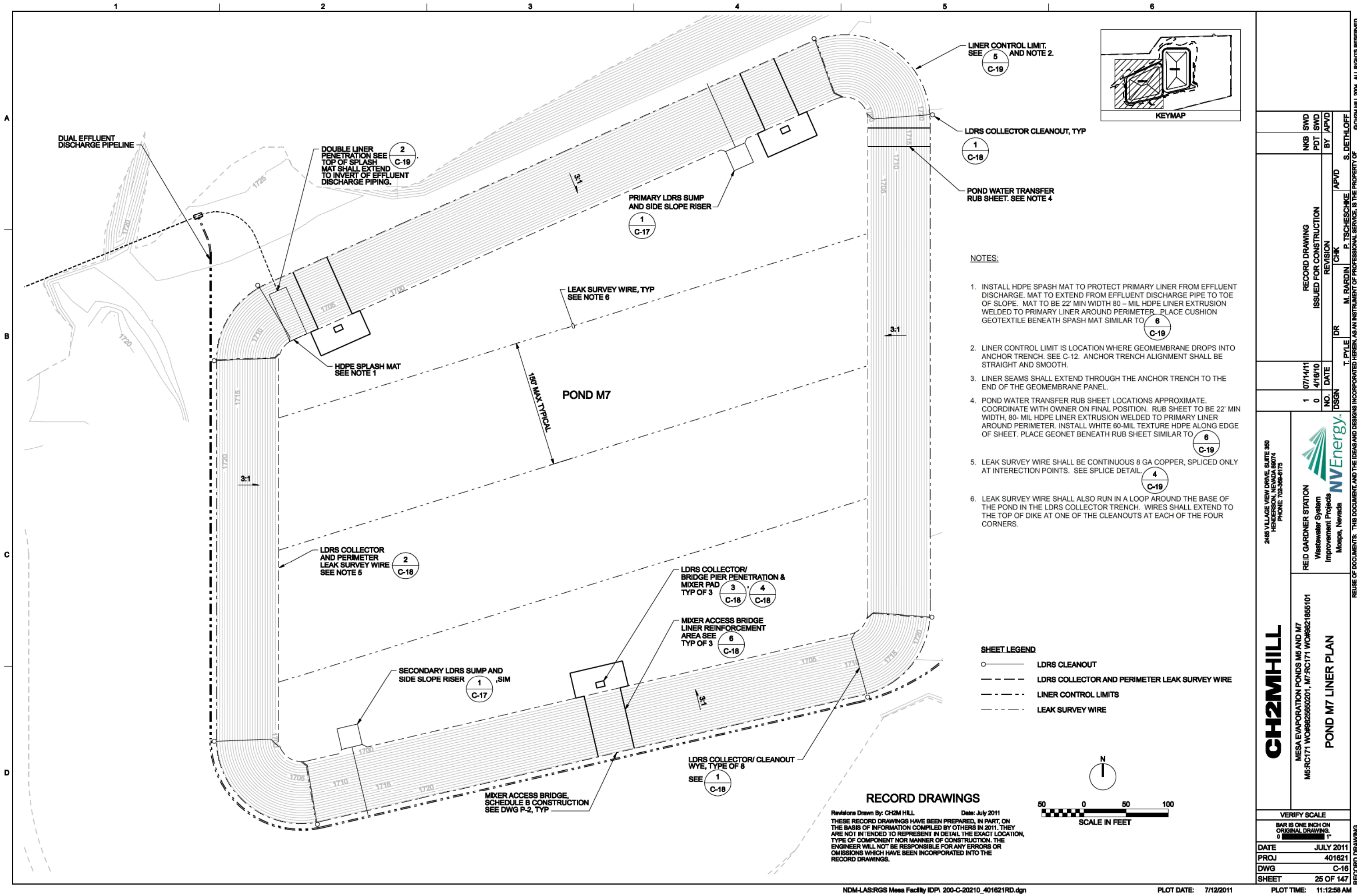
MESA EVAPORATION PONDS M5 AND M7
M5:RC171 W09626650201, M7:RC171 W09621855101

POND BERM TYPICAL SECTIONS

VERIFY SCALE	
BAR IS ONE INCH ON ORIGINAL DRAWING.	
DATE	JULY 2011
PROJ	401821
DWG	C-12
SHEET	23 OF 147

Revisions Drawn By: CH2M HILL Date: July 2011
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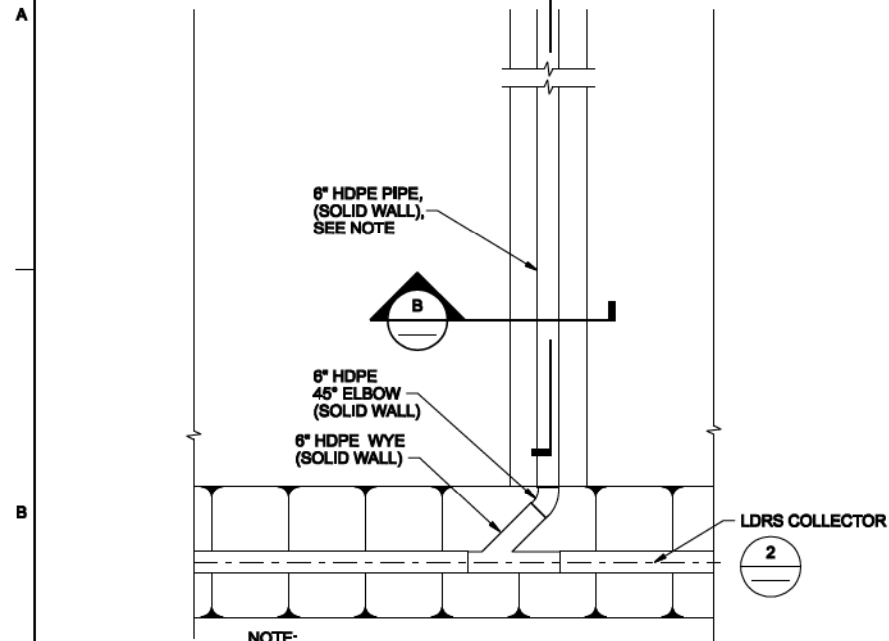


RECORD DRAWINGS

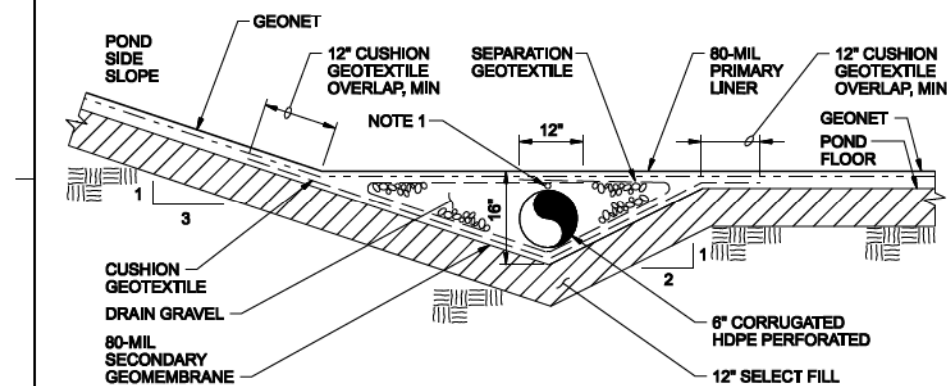
Revisions Drawn By: CH2M HILL

Date: July 2011

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1 LDRS COLLECTOR CLEANOUT WYE
NTS

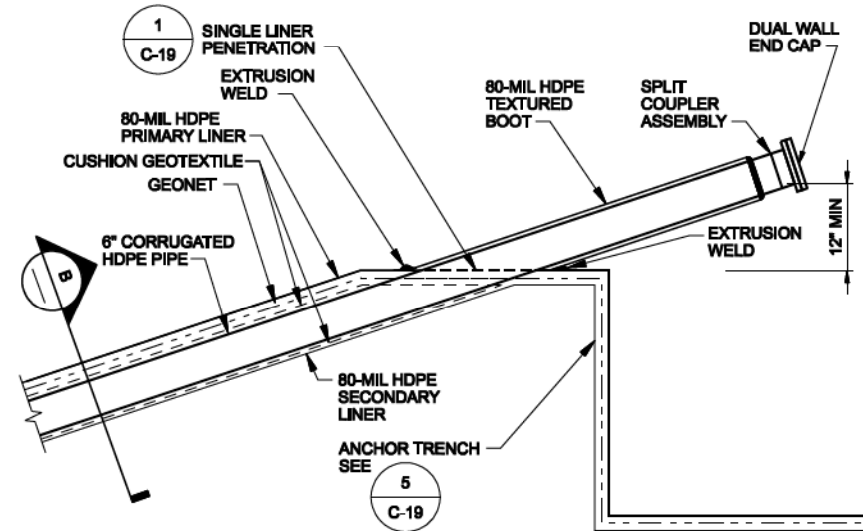


NOTES:
1. LDRS SURVEY WIRE: 8GA COPPER. TAPE TO TOP OF LDRS COLLECTOR PIPE @ 24" OC.

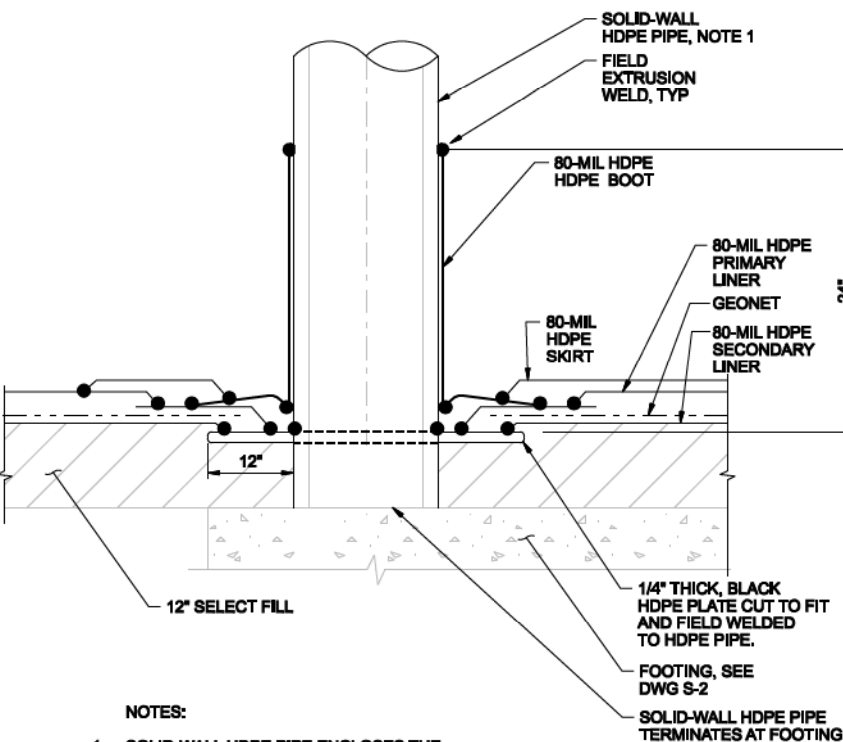
2 LDRS COLLECTOR
NTS

NOTE:

PROVIDE BOLLARDS SIMILAR TO THOSE SHOWN FOR LDRS SUMP



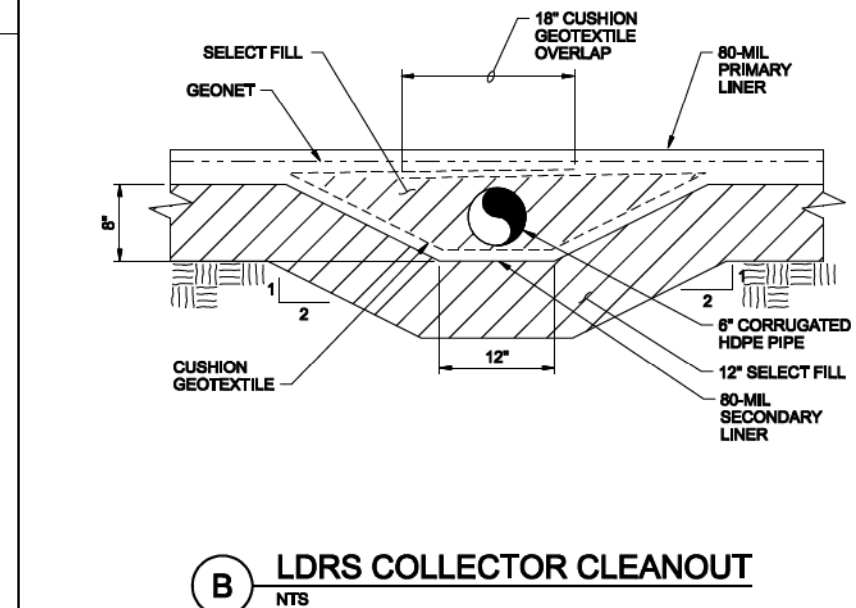
3 BRIDGE PIER LINER PENETRATION MINIMUM REQUIREMENTS
NTS



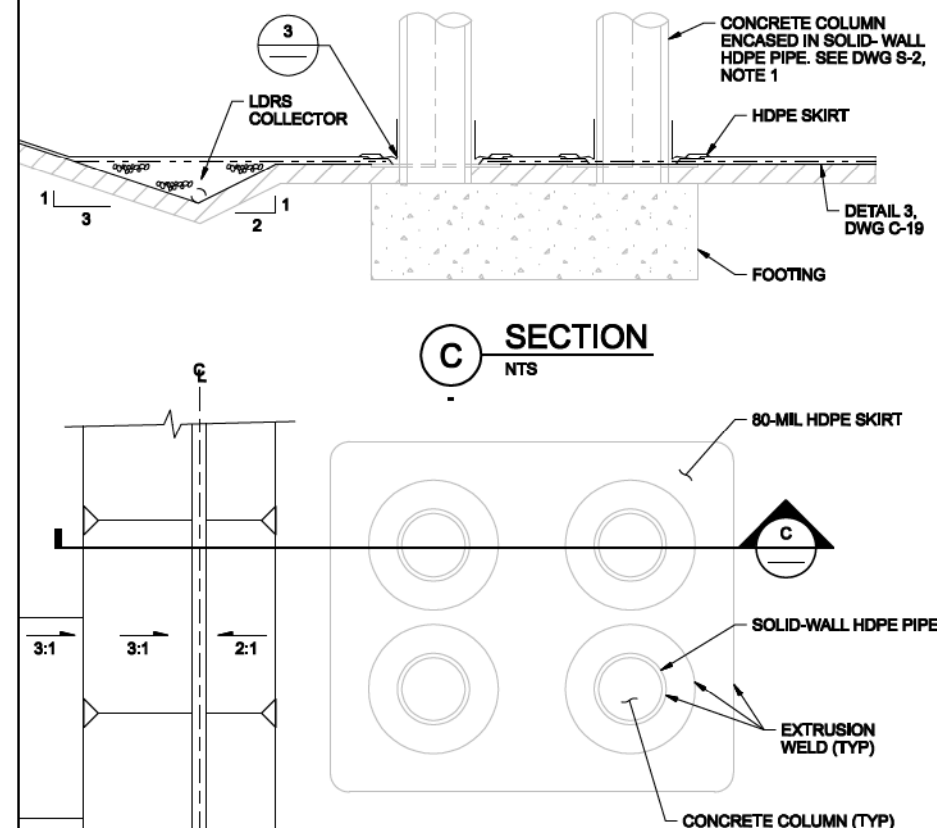
NOTES:

- SOLID-WALL HDPE PIPE ENCLOSES THE CONCRETE COLUMNS FOR THE MIXER ACCESS WALKWAY PIER. SEE DRAWING S-2.
- THIS DETAIL REPRESENTS THE MINIMUM DESIGN REQUIREMENTS FOR THIS PENETRATION. CONTRACTOR CAN ALTER OR ADJUST AS NEEDED TO MATCH BRIDGE PIER DESIGN, AND TO MEET PERFORMANCE REQUIREMENTS FOR PROJECT.
- LINER FOR PROTECTION OF MAT FOOTING IS NOT SHOWN ON THIS DETAIL, SEE DWG S-11B. REINFORCED LINER LAYER (NOT SHOWN) INSTALLED OVER PENETRATION AND SKIRT, SEE DWG C-19.

4 LDRS COLLECTOR / BRIDGE PIER LINER PENETRATION
NTS



5 LDRS COLLECTOR CLEANOUT
NTS



6 SECTION
NTS

NOTES:

- LOCATIONS AND DIMENSIONS OF FOOTINGS AND COLUMNS VARY, SEE DWG S-2 THRU S-8.
- SEAMS ARE CUT AND WELDED BETWEEN THE COLUMNS AND FROM THE COLUMNS TO THE EDGE AS NECESSARY.

2485 VILLAGE VIEW DRIVE, SUITE 350
HENDERSON, NEVADA 89074
PHONE: 702-398-6175

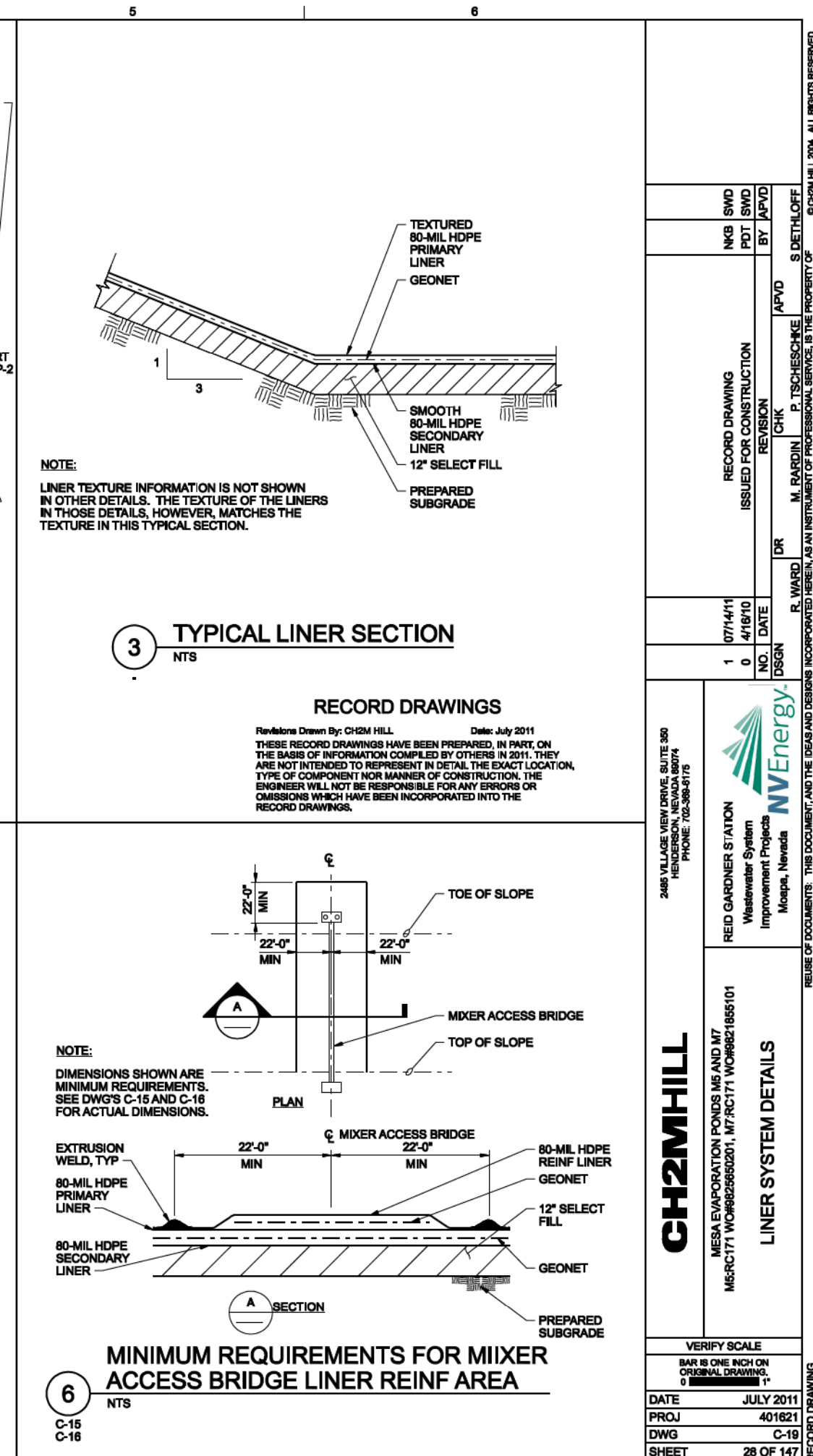
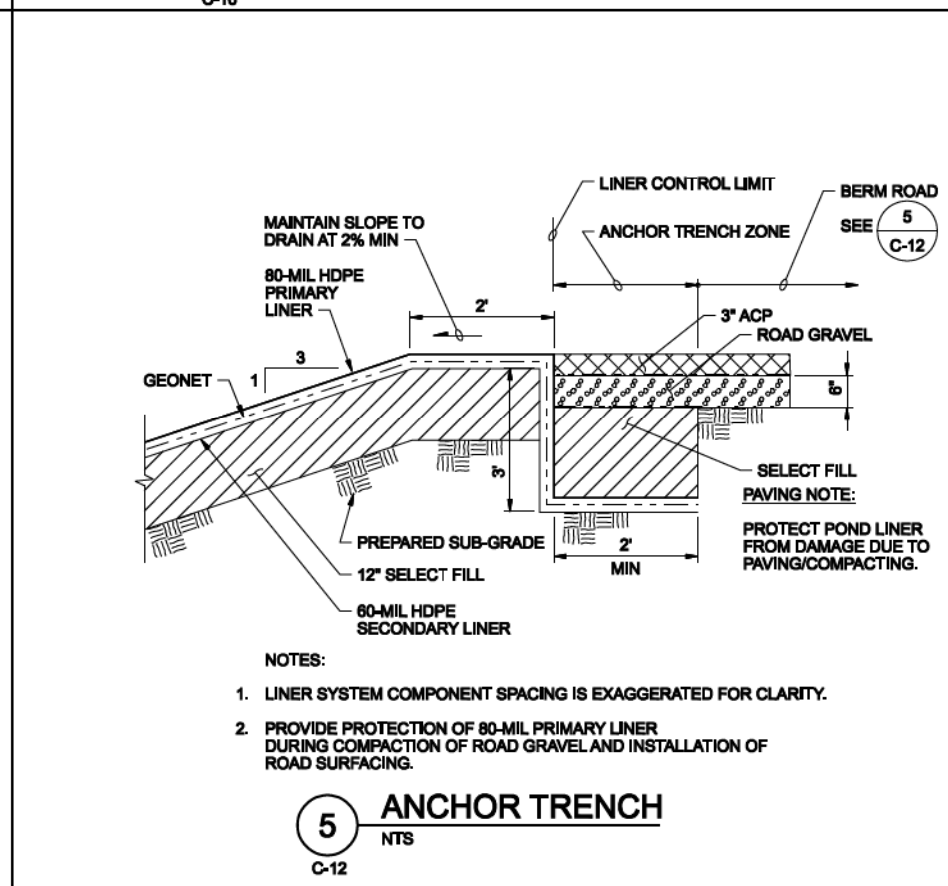
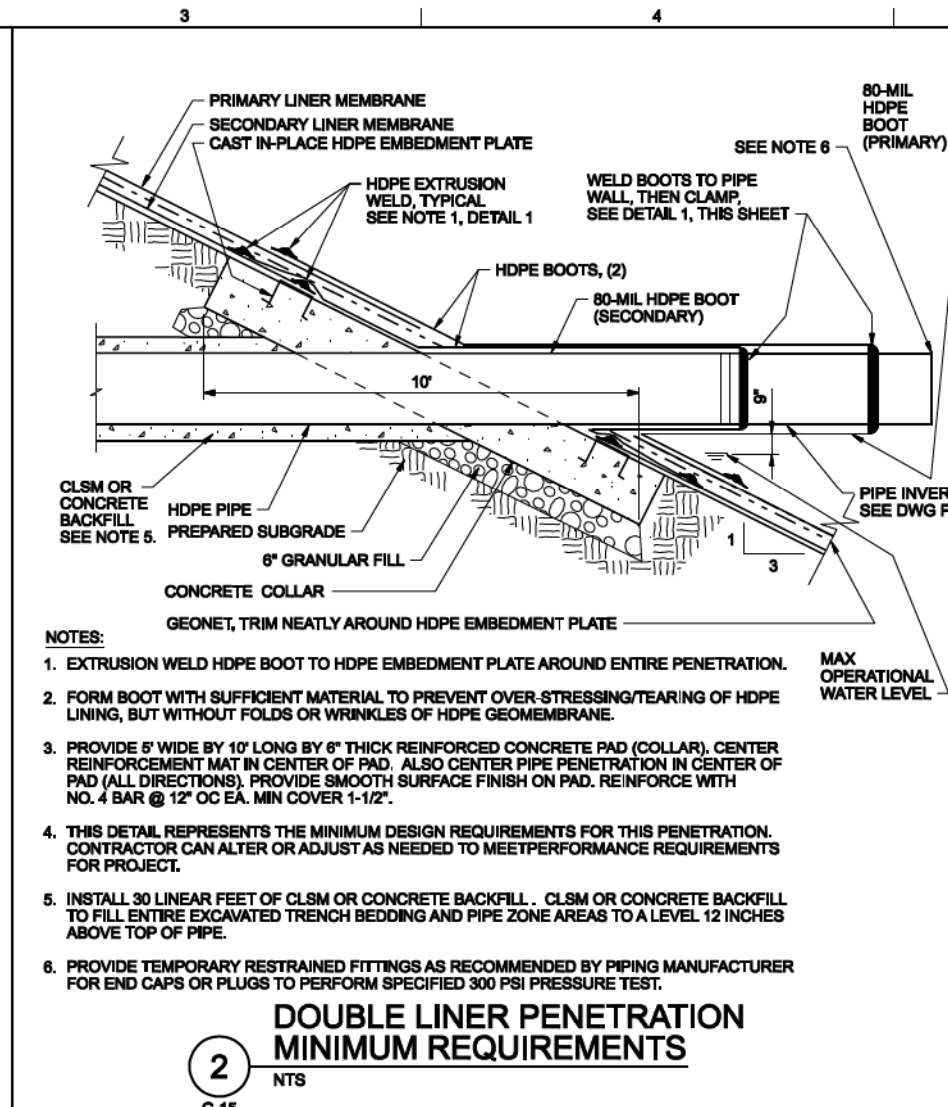
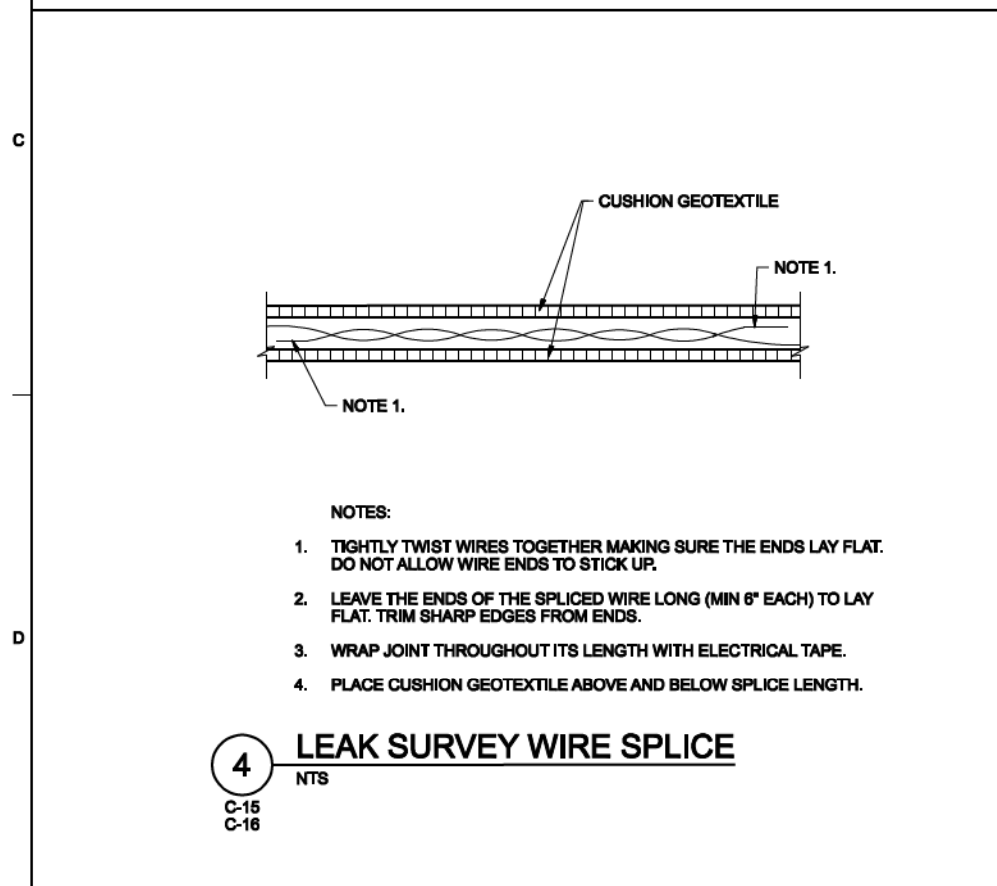
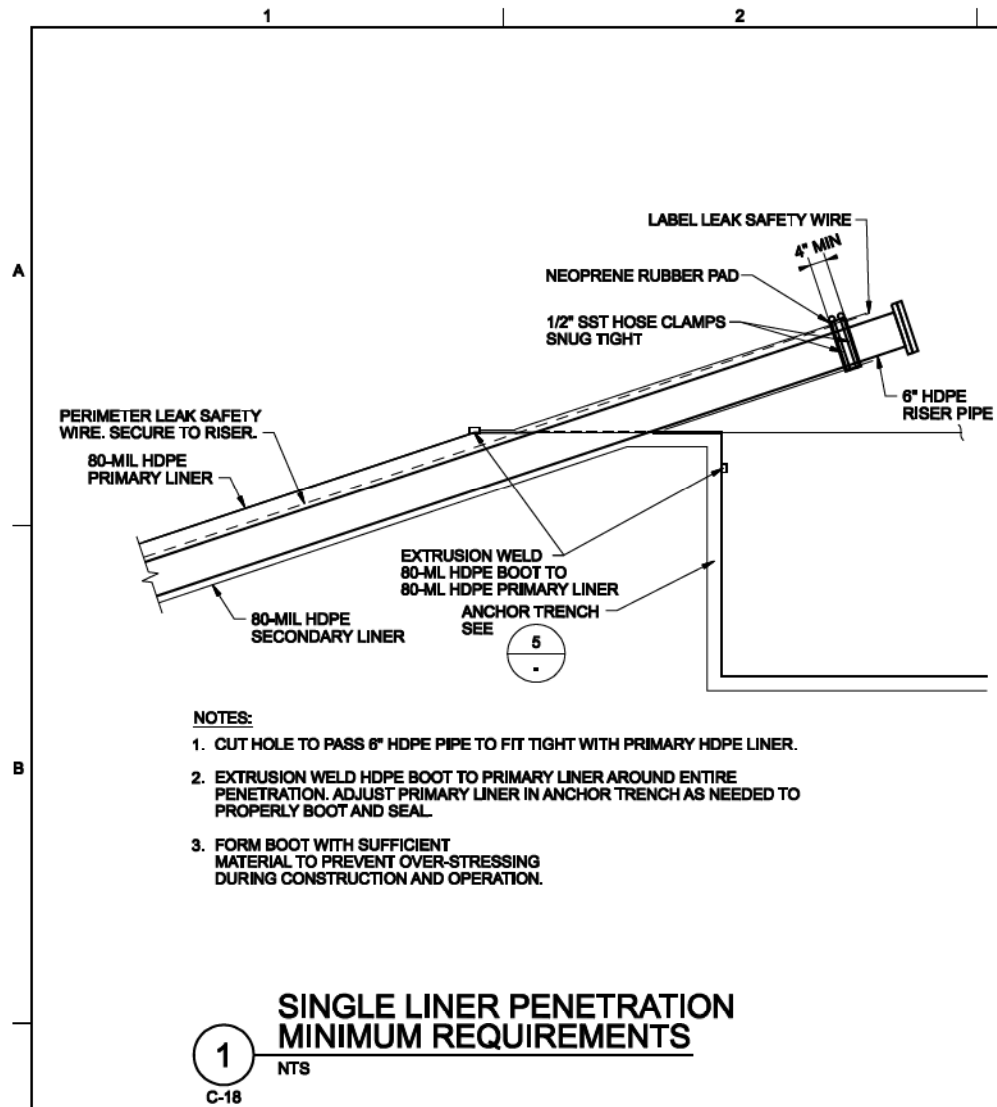
REID GARDNER STATION
Wastewater System
Improvement Projects
Mojave, Nevada

MESA EVAPORATION PONDS M5 AND M7
MS: RC171 WO# 9825550201 MT: RC171 WO# 9821655101

CH2MHILL

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING, 0" = 1"
DATE: JULY 2011
PROJ: 401621
DWG: C-18
SHEET: 27 OF 147

RECORD DRAWING
S. DETHLOFF
P. TSCHESCHKE
M. RARDIN
T. PYLE
DR
CHK
APVD
ISSUED FOR CONSTRUCTION
REVISION
BY
PDT
SWD
NKB
S
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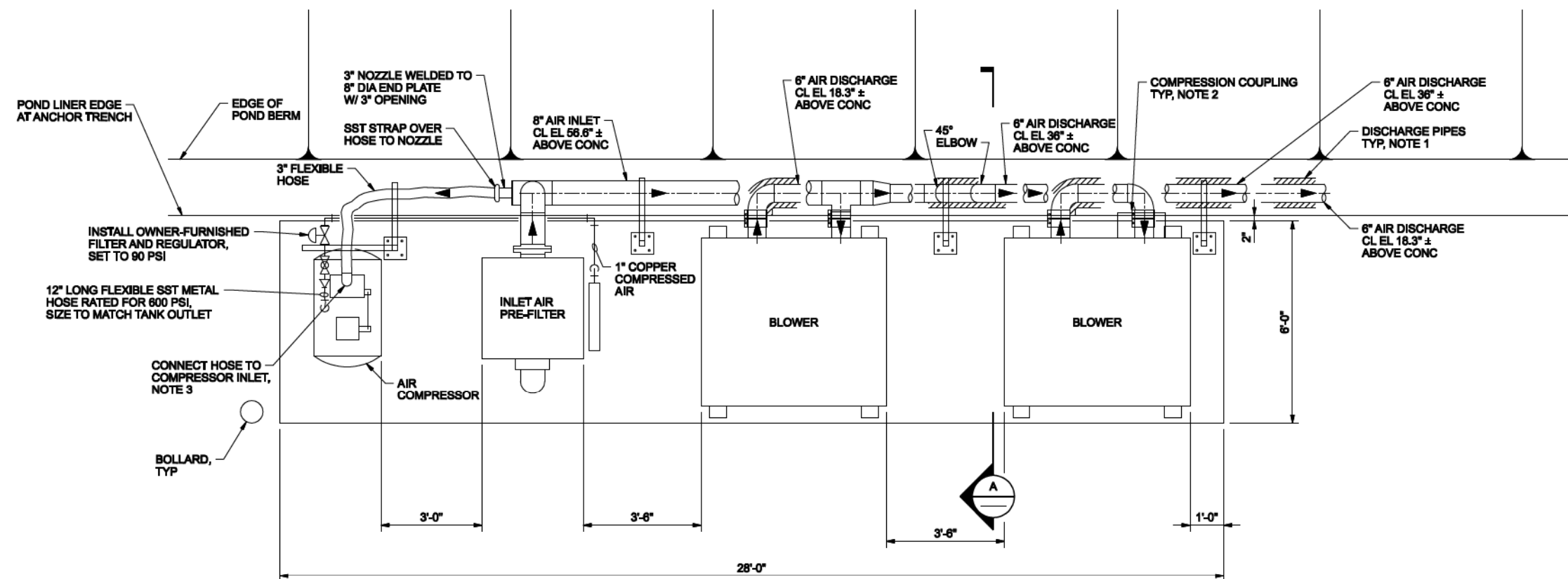
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A

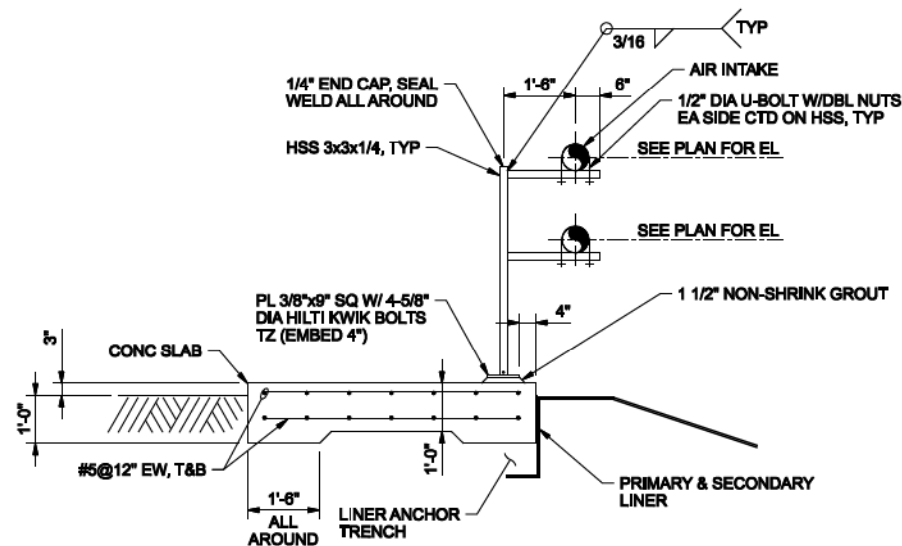
B

C

D



PLAN
1/4"=1'-0"



A SECTION
1/4"=1'-0"

NOTES:

- PIPE SHALL BE UNPAINTED SCH 5S TYPE 316 SST.
- USE 3-BOLT COMPRESSION COUPLING TO CONNECT BOTH PLAIN END PIPES. LEAVE 1/4" GAP BETWEEN PIPE ENDS. COMPRESSION COUPLING SHALL BE MORRIS CODE 6-3C W/ GASKET RATED FOR 400 DEGREES F.
- REMOVE FILTER ASSEMBLY FROM COMPRESSOR INLET. PROVIDE SCREWED FITTINGS AND HOSE ADAPTER TO CONNECT TO FLEX HOSE.
- COPPER PIPE SHALL BE TYPE K, SEAMLESS PER ASTM B88. FITTINGS SHALL BE SOLDER TYPE AND NPT AT EQUIPMENT. PROVIDE UNIONS AT CONNECTION TO INLET AIR PRE-FILTER AND AT AIR COMPRESSOR.

RECORD DRAWINGS

Revisions Drawn By: CH2M HILL Date: July 2011
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2485 VILLAGE VIEW DRIVE, SUITE 350 HENDERSON, NEVADA 89074 PHONE: 702-398-8175		REID GARDNER STATION Wastewater System Improvement Projects Mojave, Nevada		MESA EVAPORATION PONDS M5 AND M7 M5:RGT11 W0462266201, M7:RGT11 W04621865101	
CH2MHILL		BLOWER PAD		VERIFY SCALE BAR IS ONE INCH ON ORIGINAL DRAWING 0 1"	
1 07/14/11		RECORD DRAWING ISSUED FOR CONSTRUCTION		S DETHLOFF	
0 3/18/11		REVISION		M RISSL	
NO. DATE		DR		C MCCOY	
1 07/14/11		APVD		BY APVD	
0 3/18/11		CHK		WMM SWD	
NO. DATE		NKB SWD		BY APVD	
1 07/14/11		DGN		© CH2M HILL 2004. ALL RIGHTS RESERVED.	
0 3/18/11		MISLIN		THIS DOCUMENT, AND THE IDEAS AND DESIGNS INCORPORATED HEREIN, AS AN INSTRUMENT OF PROFESSIONAL SERVICE, IS THE PROPERTY OF CH2M HILL AND IS NOT TO BE USED, IN WHOLE OR IN PART, FOR ANY OTHER PROJECT WITHOUT THE WRITTEN AUTHORIZATION OF CH2M HILL.	
NO. DATE		DR		RECORD DRAWING	
1 07/14/11		DGN		DATE JULY 2011	
0 3/18/11		MISLIN		PROJ 387530	
NO. DATE		DR		DWG M-6	
1 07/14/11		DGN		SHEET 135 OF 147	
0 3/18/11		MISLIN		PLOT DATE: 7/12/2011	
NO. DATE		DR		PLOT TIME: 11:38:08 AM	

Appendix C

Forms and Reports

Emergency Response Event Log
Reid Gardner Station Mesa Ponds M5 and M7
(To be completed during the emergency)

Name: _____ Position: _____

Event Start Date: _____ Event Start Time: _____

Event Description: _____

Initial Event Level: _____

When and how was the event detected? _____

Weather conditions: _____

General description of the unusual or emergency event: _____

Log all Notifications and Activity in the table below:

Date	Time	Action/Event Progression	Taken by

Report prepared by: _____

Date: _____

Event Termination Log
Reid Gardner Mesa Ponds M5 and M7
(To be completed during the emergency)

Date: _____ Time: _____

Weather conditions: _____

General description of emergency situation: _____

Area(s) of Ponds affected: _____

Extent of damage: _____

Possible cause(s): _____

Effect on Pond's operation: _____

Initial reservoir elevation: _____ Time: _____

Maximum Reservoir elevation: _____ Time: _____

Final Reservoir elevation: _____ Time: _____

Description of area flooded downstream/damages/injuries/loss of life: _____

Other data and comments: _____

Observer's name and telephone number: _____

Report prepared by: _____ Date: _____