ER-GUIDE-20211, R0

Inspection Guidance for Environmental Programs Watershed, Retention, and No Exposure Controls

Effective Date: 4/6/2017

Next Review Date: 4/6/2020

Classification Review: ☒ Unclassified ☐ UCNI ☐ Classified

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REVISION HISTORY

Document No./ Revision No.	Issue Date	Action	Description
EP-DIV-GUIDE-20211, R0	12/19/14	New document	
ER-GUIDE-20211, R0	4/6/2017	Major Revision	Update guidance and attachments for MainConn cloud migration, clarification of inspection requirements, personnel titles, and process.

TABLE OF CONTENTS

1. PURPOSE AND SCOPE

The purpose of this document is to provide guidance on inspection requirements of watershed controls, retention controls, and no exposure controls that are part of the Environmental Remediation (ER) Surface Water program at Los Alamos National Laboratory (LANL). This guide applies to the project personnel conducting inspections of these controls.

2. BACKGROUND

Storm water controls, such as watershed and grade-control structures, require inspection and maintenance for the proper operation and long-term stability of the control. Watershed controls are installed as a requirement of the Compliance Order on Consent. Retention and no exposure controls are installed to meet the requirements of the Individual Permit for Storm Water (National Pollutant Discharge Elimination System Permit No. NM0030759) (IP).

3. EMERGENCY ACTION PLAN

While the majority of controls addressed in this guidance do not impound enough water to cause major flooding in the event of a failure, structural failure and impending structural failure have the potential to result in a serious hazard to safety. If a structure is failing, or appears to be rapidly approaching failure, and a hazard exists, this Emergency Action Plan should be immediately activated. At a minimum, take the following actions:

- If the emergency is life-threatening, immediately call 911 and describe the nature of the emergency. Give the location (e.g., “the DP Canyon grade-control structure located at the northern edge of TA-21” or “the Pueblo Canyon grade-control structure located to the north of the NM 502/NM 4 intersection”). Let the 911 operator know if there are off-site roads or areas below the dam that need to be blocked and ask for assistance in warning people in downstream areas. Then call the LANL Emergency Management Response Operations Support Center at (505) 667-6211.
- Regardless of the nature of the emergency, contact the Technical Area 64 (TA-64) Field Operations Center either by radio or by phone at (505) 665-2824. Tell them the details of the problem and give the location (e.g., “the DP Canyon grade-control structure located at the northern edge of TA-21” or “the Pueblo Canyon grade-control structure located to the north of the NM 502/NM 4 intersection”). Tell them to check the status board for crews working downstream of the structure and to have them evacuate immediately.

3. EMERGENCY ACTION PLAN (continued)

- If necessary, evacuate the immediate area. DO NOT TRY TO INTERVENE OR PHYSICALLY PREVENT FAILURE OF THE STRUCTURE.

If in doubt about the severity of a problem, notify the TA-64 Operations Center and ask for an engineer or shift operations manager to visit the structure as soon as possible. See the phone numbers below.

Person/Office	Phone Number
Emergency Management (Injury/Death)	911
LANL Emergency Management Response (EMR)	(505) 667-6211
TA-64 Operations Center	(505) 665-2824
Occupational Medicine Emergency	(505) 667-0660 (24-hr contact)
Protective Force (Station 100)	(505) 667-4437
LANL Directory Assistance	(505) 667-5061

4. INSPECTIONS

Controls are inspected to ensure that they are functioning properly and to provide a mechanism for initiating maintenance. Inspections may evaluate:

- debris/sediment accumulation that could impede operation;
- water levels behind retention structures;
- physical damage of structure, or failure of structural components;
- undermining, piping, flanking, settling, movement, or breeching of structure;
- vegetation establishment and vegetation that may negatively impact structural components;
- rodent damage;
- vandalism; and
- erosion.

4.1 Watershed Controls

Watershed controls requiring inspection are listed in the Maintenance Connection (MainConn) database. These types of controls may include grade-control structures, wetland stabilization structures, weirs, and sediment ponds which are not regulated under the IP. Items to be inspected at each control are specific to that control. An example hard copy inspection form for a current watershed control is provided in Attachment 1. An example electronic copy inspection form for a current watershed control is provided in Attachment 2. Attachments 1 and 2 contain guidance for how each form shall be completed.

4.1 Watershed Controls (continued)

Inspections at watershed controls are required in the following instances:

- *Flow Event* – Conduct inspections following each significant flow event (flow >50 cubic feet per second as measured at nearest gage station to the structure) within 15 calendar days. The occurrence of a qualifying flow event is based on data from the associated gage station. Attachment 3 identifies the associated gage stations for each existing watershed structure. Flow event inspections can be substituted in lieu of any quarterly inspection or the fall biannual inspection.

- *Quarterly* – Conduct quarterly inspections during the first year following either construction of a new watershed control or completion of major activity. Major activities include addition of major component(s) or re-build of a major component(s) such as replacing or adding a new pipeline/spillway. Quarterly inspections correspond to calendar year quarters (i.e., January through March, April through June, July through September, and October through December). Following this initial 1-year period the inspection frequency may be reduced to an annual frequency as described in the next item.

- *Annually* – Following the first year of new watershed controls conduct the first annual inspection in the spring between March 21 and May 31 to allow sufficient time for limited repairs/minor maintenance to be completed prior to the rainy season. Annual inspections for existing watershed controls shall be conducted thereafter in the spring between March 21 and May 31. Attachment 3 identifies the current inspection schedule for each of the existing watershed controls. If major revitalization/maintenance activities have been completed since the beginning of 2014 these are also provided.

4.2 Retention and No Exposure Controls

Retention and no exposure controls requiring inspection are listed in the MainConn database. Retention controls are defined as controls designed to capture 100% of the storm water runoff from the 3-year, 24 hour design storm. Further clarification of retention controls are found in Section 4.8. No exposure controls are those that achieve total elimination of exposure of site related pollutants to storm water and are certified as such to the Environmental Protection Agency (EPA) under the IP. Inspections of these controls are required in the following instances:

- *Post Storm*

  Site Monitoring Area (SMA) Rain Event Inspection (conduct at retention and no exposure controls) – Conduct within 15 calendar days after every 0.25 in. or more intensive rain event within 30 min. The occurrence of a qualifying rain event is based on data from the associated precipitation gage.

4.2 Retention and No Exposure Controls (continued)

Water Level and Sediment Inspection (conduct at retention controls) – For the first year of certification, conduct within 24 hrs. or as soon as practicable, after every 0.75 in. or more intensive rain event within 24 hrs. Conduct a second water level inspection 7 days following the rain event. The occurrence of a qualifying rain event is based on data from the associated precipitation gage. Once control is certified, typically after one-year of performance, conduct inspection 7 days following rain event based on every 0.75 in. or more intensive rain event within 24 hrs.

- *Annually* (conduct at retention and no exposure controls) – Conduct annually prior to May 31.
- *Significant Event* (conduct at retention and no exposure controls) – Conduct after an event such as a fire, flood, etc. that could significantly impact the controls.

Water level and sediment inspection requirements are described in section 4.8 of this guide. SMA rain event and annual and significant event inspection requirements can be found in EP-DIV-SOP-20012, *Post-Storm Inspection of NPDES Individual Permit Storm Water Control Measures and Installation and Maintenance of Non-Engineered Storm Water Control Measures,* and EP-DIV-SOP-20125, *Performing NPDES Storm Water Individual Permit Visual Inspections*.

4.3 Inspector Qualifications

Inspections and certifications of watershed controls will be conducted by qualified personnel that are either (1) a Certified Inspector of Sediment and Erosion Control (or equivalent) and familiar with the operation and maintenance of the of the control or (2) a professional engineer licensed by the State of New Mexico who is familiar with the design, operation, and maintenance of the control. Either the inspection or the certification shall be completed by a professional engineer licensed by the State of New Mexico who is familiar with the design, operation, and maintenance of the control. The inspection and the certification of the inspections shall not be conducted by the same person.

4.4 Inspection Reports and Certification of Inspections

The Tracking and Reporting (TR) Team is responsible for issuing work orders from the tracking database (currently the MainConn database). These may either be issued in electronic copy or hard copy format. Attachments 1 and 2 provide additional direction for completing these formats. The inspector is responsible for entering all inspection form information into the MainConn database and forwarding the completed form for certification. Following certification, Individual Permit inspection records will be forwarded to the LANL Storm Water Program Manager, or designee, for review prior to submitting inspection reports to Records Management.

The inspection reports provide recommendations for preventive and corrective maintenance. The Storm Water Program Manager, or designee, reviews the recommendation for maintenance and approves or denies the recommendation. If the maintenance recommendation is approved, a field work order request is developed and implemented.

4.5 Maintenance Types

Inspections may identify three types of maintenance requirements: preventive maintenance (PM), corrective maintenance (CM), and high priority maintenance (HPM). PM is maintenance of a control related to site conditions which may, if not addressed, result in loss of function of a control. An example of an inspection requiring PM is rilling on the slope of a berm or removing excess geosynthetic liner. CM is maintenance of a control related to restoring function of a control. An example of a control requiring CM is removing debris which is blocking a pipe outlet or formation of an erosional feature on/adjacent to a spillway. HPM is maintenance to address either a safety issue or if failure of the control is imminent. An example of HPM is a public road where settling occurred from a culvert installation that impacts driving conditions or an erosion feature which is resulting in a berm failure.

4.6 Inspection of Earth Embankments

Earth embankments are subsets of structural controls consisting of native or engineered fill used to impound or divert water. Earth embankments are often integrated into the construction of other structural controls, often forming the foundation or abutments.

4.6.1 Vegetation

Establishment and maintenance of vegetation can prevent erosion of embankments and other earth surfaces. Uncontrolled growth of vegetation can damage the embankments, impede design flow through spillways/standpipes, and impact other structural components.

Native grass is an effective and inexpensive way to prevent erosion of embankment surfaces. Roots and above-ground vegetation tend to trap fine sediments, forming an erosion-resistant layer once well established. Inspections will monitor for the establishment of native grass.

Trees, brush, and woody vegetation should be removed before they impact certain controls such as the tops of water retention embankments (e.g., dams, berms, or levees), gabion structures, and concrete or asphalt structures. Removal may require the excavation of roots, but vegetation should be evaluated on a site-by-site basis.

4.6.2 Erosion

Erosion is one of the most common maintenance issues. Periodic and timely preventive maintenance is essential in preventing continuous deterioration and possible failure of best management practices (BMPs). Inspections should focus on identification and documentation of the erosion issues and determination of the cause of the erosion. Inspections should look for obvious signs of erosion, such as rills and gullies, as well as piping, scouring, and sloughing.

At embankments, a major erosion concern at a control is the interface between the embankment and any hard structures. Poor compaction adjacent to a structure or subsequent settlement can lower the constructed grade of the structure. Runoff often concentrates along these areas, resulting in erosion. Timely repair of eroded areas is necessary to prevent more serious damage to the control.

At no exposure controls, erosion can lead to exposure of soils below a no exposure cover or cap. Timely repair of the cover is necessary to prevent additional erosion and possible exposure.

Fluvial geomorphic evaluation of the cause of erosion may be necessary to determine a long-term strategy to arrest erosion issues. Geomorphic evaluation identifies larger trends in local hydrology such as overall degradation of the channel reach and headcut migration.

4.6.3 Settlement and Cracking

Settlement within the embankment can cause cracking, increase the potential for erosion, and compromise any overlying structure (e.g., concrete). Inspection should identify any settlement/cracking of the embankment.

4.6.4 Seepage

All embankments have the potential for seepage resulting from water percolating slowly through the structure. Seepage through the control can be normal as long as it does not demonstrate evidence of erosion, piping, undermining, or settling. Inspections should identify and monitor seepage.

4.6.5 Piping

Piping is the progressive erosion and removal of sediment by concentrated seepage flows through an earth embankment. As material is eroded, the area of the "pipe" increases, and the quantity and velocity of flow increase, which in turn erode more material.

Piping may be recognized by the discharge of muddy or discolored water, sinkholes, or an erosion area on the downstream base of an embankment.

4.6.6 Rodent Control

Rodent burrows and dens can lead to water piping and subsequent deterioration of the banks. Inspection for rodent activity at an earth embankment should focus only on the areas where water impoundment will occur. Inspectors should not attempt to physically remove rodents.

4.7 Inspection of Other Structural Controls

Other structural controls include hard structures, such as concrete structures, riprap, gabions, culverts, and control elements such as geotextiles, which are often components of earth embankments. Inspection recommendations are found in the following subsections.

4.7.1 Gabions

Gabions need to be inspected for sediment accumulation, broken wires, excessive bulging, or failures and repaired or replaced as necessary. If erosion is occurring at the gabion structure, the inspection should properly identify the cause and severity.

4.7.2 Concrete

Structural problems associated with concrete include cracking, misalignment of joints, undermining, and settlement. Concrete structural problems are often a result of issues with the foundation. Structural problems may arise at controls where concrete is poured in place, or where precast concrete is set in place (such as the use of Redi-Rock® or Jersey barriers). In both applications, structural problems should be thoroughly inspected to determine the cause and severity.

Nonstructural maintenance issues with concrete may not be a direct indicator of pending failure but rather may indicate deterioration of the concrete. These issues may include surficial exfoliation, cracking, and other deterioration. Concrete deterioration may result in the exposure of rebar, lead to cracking, and ultimately become a structural problem. The inspector should note and monitor any staining of the concrete that may be indicative of internal rebar exposure to water and cracks that may be widening, lengthening, or spalling.

For concrete that requires repair or replacement, the U.S. Department of the Interior, Bureau of Reclamation (USBR) provides a detailed guide that should be evaluated prior to implementing maintenance (USBR, 1997).

4.7.3 Asphalt Pavement/Sealant

Maintenance issues associated with asphalt are deterioration, cracking, slumping, and erosion around and under edges. Asphalt and concrete sealants are subject to similar issues of deterioration and cracking. Many of these issues are related to the integrity of the foundation to which they are applied.

4.7.4 Culverts and Standpipes

Culverts and standpipes are inspected for the presence of debris, trash, or any other foreign objects that may obstruct flow. Minimizing the potential for soil erosion at the inlet and outlet areas reduces scour or undermining and caving of adjacent soil supporting the culvert. Deformation of the culvert barrel, corrosion of metal and loose or corroded bolts, piping along the pipe, and settlement or sideways movement should be noted in inspections.

4.7.5 Riprap

Riprap areas should be inspected for displaced rock, slumping, and erosion at edges.

4.7.6 Erosion Control Blankets

Erosion Control Blankets (ECBs) include a wide category of materials that function to promote soil surface stability and vegetation growth. These materials include turf reinforcement matting and straw/coir coconut/natural fiber blankets. ECBs require inspection for improper anchoring, damage, dislodging, and undercutting.

4.7.7 Drainage Systems

Drainage systems are installed to allow for the managed drawdown of surface water stored in detention/retention systems. Drainage systems may consist of perforated-pipe drains, aggregate drains (e.g., French drains), or other systems. Drainage systems may include multiple layers of aggregate or engineered biological material to benefit water quality during filtration. Drainage systems require inspection for clogging and maintenance of any cleanout areas. Because of the individual nature of the drainage system, site-specific inspection requirements will be detailed in the inspection form.

4.8 Water Levels and Sediment Inspection

4.8.1 Water Level Inspection

Retention structures must provide adequate drawdown of retained storm water (e.g., infiltration or evapotranspiration) in order to have capacity to capture the design storm volume within a given period of time. Water levels will be recorded at a staff gage after a qualifying rain event and during one subsequent inspection. At sites that do not have a staff gage, a visual inspection will be completed. The initial inspection will be conducted within 24 hrs. Or as soon as practicable. The follow-up inspection will be conducted within 7 days from the rain event.

4.8.2 Sediment Evaluation and Management

Storm water controls such as retention/detention basins, watershed grade-control structures, and related structures will be evaluated for sediment removal during inspections. Sediment evaluations are performed to determine if sediment accumulation has reached a point that impacts the function of the control. For retention controls covered under the IP, the certification submitted to the EPA identifies the maximum sediment accumulation level allowed to maintain the design retention volume. Requirements for sediment sampling characterization and management follows the surface water program specific sediment decision tree and associated procedures, as necessary.

4.8.3 Assessing Water Levels and Sediment Accumulation

To provide a visual assessment of water levels and sediment accumulation, a staff gage may be installed and maintained at each control as shown in Figure 1. The figure depicts five key elevations:

A. Top of Outlet – The elevation of the outlet control (spillway, riser pipe, etc.) for the basin.

B. Bottom of Basin – The elevation of the lowest point of the basin.

C. Maximum Sediment – When sediment accumulates to this level, sediment removal is required.

D. Inspected Sediment – The elevation of sediment at the time of inspection.

E. Inspected Water Level – The water level at the time of inspection.

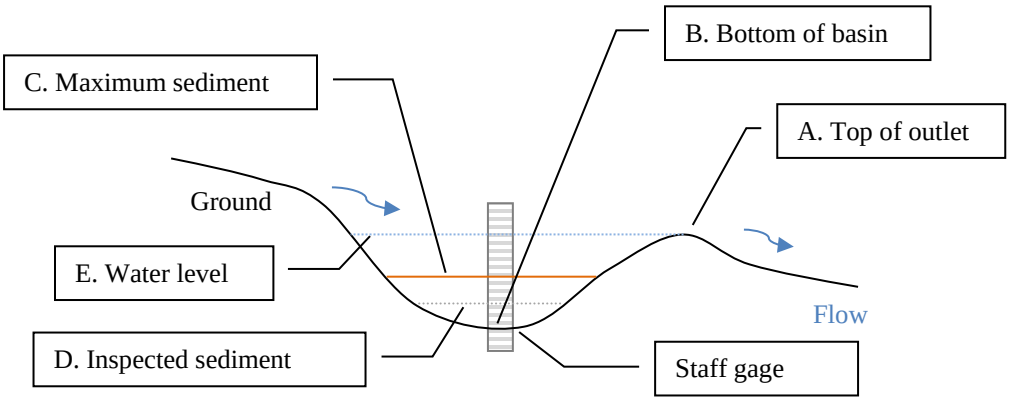

Figure 1 Example longitudinal cross-section of retention catchment basin

The difference in elevation between point A and point B is the designed depth of the basin. Point C represents the maximum amount of sediment accumulation that is allowed. Point D is the elevation of sediment documented at the time of inspection. If point D is equal to or higher in elevation than point C, sediment removal is required. Point E is the water level at the time of inspection. If ponded water does not allow for visual identification of sediment levels during retention inspections, sediment levels will be inspected during the annual inspection.

4.8.3 Assessing Water Levels and Sediment Accumulation (continued)

The elevations of points A, B, and C for each control are documented from as-built surveys. These as-built survey elevations are stored in the MainConn database.

To allow for accurate establishment and repeatable evaluation of staff gages, a pre-established off-set may be necessary at the control. The monument provides a point of constant elevation that is not subject to seasonal flooding or destruction during sediment removal efforts. The pre-established off-set also allows reestablishment of a gage should the gage be damaged or moved.

4.8.4 Watershed Controls

Watershed controls that integrate catchment basin(s) may require sediment monitoring and removal. Optimum function of the basin(s) relies on a prescribed basin depth that is specific to each control. When sediment accumulation exceeds the maximum sediment level, which is represented by point C in Figure 1, sediment removal is required.

4.8.5 Certified Total Retention Controls

As required in the draft IP (2016), certified IP retention controls are designed to capture 100% of the storm water runoff from the 3-year, 24-hour design storm... To maintain this capture volume, sediment levels within retention area(s) need to be inspected to determine if sediment removal is necessary. The maximum sediment level is represented by point C in Figure 1. When sediment accumulation is higher in elevation than point C, the total retention control no longer has the capacity to capture 100% of the design storm, and sediment removal is required. Capture volume between storm events is dependent on the drawdown time for each control. Drawdown times will be estimated from water levels (point E in Figure 1) recorded during retention inspections.

4.9 Vandalism

Dirt bikes, motorcycles, and four-wheel-drive vehicles can severely damage the vegetation on embankments surrounding the structure. Worn areas could lead to erosion and more serious problems. Constructed barriers such as fences, gates, and cables strung between poles are effective ways to limit access of these vehicles. Mechanical equipment located at a control is often a target of vandalism. Public safety is always an issue with controls, including the safety of people not authorized to use or encroach upon the facility. Any impacts associated with vandalism should be identified in the inspection of the control and scheduled for maintenance.

5. REFERENCES

EP-DIV-SOP-20012, Post-Storm Inspection of NPDES Individual Permit Storm Water Control Measures and Installation and Maintenance of Non-Engineered Storm Water Control Measures

EP-DIV-SOP-20125, Performing NPDES Storm Water Individual Permit Visual Inspections

ER-GUIDE-20087, Design Storms for Individual Permit (IP) Corrective Actions and Control Measures – Design Guide

Storm Water BMP Manual, Los Alamos National Laboratory (2011)
http://int.lanl.gov/environment/water/guidance/best-management-practices.shtml

Radiation Protection of the Public and the Environment, DOE Order 5400.5 (U.S. Department of Energy, 1993).

Radiation Protection of the Public and the Environment, DOE Order 458.1 (U.S. Department of Energy, 2011).

Guide to Concrete Repair (USBR, 2015)
http://www.usbr.gov/tsc/techreferences/mands/mands-pdfs/Guide%20to%20Concrete%20Repair%202nd%20Edition.pdf

6. ACRONYMS AND ABBREVIATIONS

BMP	best management practice
CM	corrective maintenance
DOE	U.S. Department of Energy
ECB	erosion control blanket
EMR	Emergency Management Response
EPA	Environmental Protection Agency
ER	Environmental Remediation
HPM	high priority maintenance
IP	Individual Permit
LANL	Los Alamos National Laboratory
MainConn	Maintenance Connection
PM	preventative maintenance
SMA	site monitoring area
TA	technical area
TR	Tracking and Reporting
USBR	U.S. Bureau of Reclamation

7. ATTACHMENTS

Attachment 1: Example Hard Copy Watershed Structure Inspection Form with Guidance
Attachment 2: Example Electronic Watershed Structure Inspection Form with Guidance
Attachment 3: Existing Watershed Controls - Gage Station Inspection Assignment

ATTACHMENT 1
Page 1 of 6
Example Hard Copy Watershed Structure Inspection Form with Guidance

This form is numbered as a Work Order with a work order number assigned by the Storm Water Tracking and Reporting (TR) Team using MainConn.

For both clarification of information provided and steps in this section identified with "Item #," refer to the corresponding numeric callouts in Figures.

HEADER

No entry information required. The Work Order No. (Item 1) is assigned by the TR Team using MainConn.

MAINTENANCE DETAILS

No entry information required. This portion of each form contains the following information:

- Identifies the structure being inspected in the middle right column (Item 2).
- Identifies the type of inspection being completed, i.e. significant rain event, annual, etc., in the bottom left column (Item 3).
- Provides the due date for the inspection to be conducted (Item 4).

TASKS

The ADEM Field Team Lead should follows the steps in this section when using a hard copy Inspection form to document field notes during inspection for EM watershed, retention, and no exposure controls *if* electronic data collection is not used at time of inspection. If electronic data collection is performed, proceed to the Electronic Data Entry Section.

This portion of the form contains columns for task (Item 5), rating (Item 6), measurement (Item 7), initials (Item 8), and selection boxes for failed (Item 9), N/A (Item 10), and complete (Item 11). On the hard copy form the rating, measurement, and initials columns (Items 6, 7, and 8) will be used to provide written comments. The task column is separated into two categories. The primary category identifies elements (Item 12) of the overall control, i.e. embankment, spillway, culvert, etc. to be inspected. Within each element a number of inspection tasks (Item 13) are provided.

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Item	Hard Copy field note documentation
9	The failed, N/A, or complete column shall be checked for each Item 13 provided on the form. Check Item 9 (failed) if this inspection task was not inspected. Please provide a comment in Items 6, 7, and 8 identifying why the element was not inspected, i.e. sediment level not inspected due to ponded water being present.
10	The failed, N/A, or complete column shall be checked for each Item 13 provided on the form. Check Item 10 (N/A) if this element does not exist/require inspections anymore.
11	The failed, N/A, or complete column shall be checked for each Item 13 provided on the form. Check Item 11 (complete) if this element was inspected. Please provide comment(s), if required, in Items 6, 7, and 8.
12	These elements are header information in the task section. Inspection tasks (Item 13) will only populate for category elements assigned in MainConn to the location being inspected. Unnecessary category element headers (e.g location does not have a cascade structure) will be removed from the work order prior to the printing of the final copy.
6, 7, and 8	Provide comments for each Item 13, as appropriate. Each comment shall be cross-referenced to the appropriate inspection task number(s), Item 13. If monitoring, repair, additional investigation is being recommended the comments shall be structured in separate paragraphs as follows: • "Monitor ……" Additional sentences may follow the first statement to provide further clarification if necessary. • "Repair ….." Additional sentences may follow the first statement to provide further clarification if necessary. • "Replace……." Additional sentences may follow the first statement to provide further clarification if necessary. • "Investigate……" Additional sentences may follow the first statement to provide further clarification if necessary. All photographs provided shall be cross referenced to either element number (s) (Item 12) or inspection task number(s) (Item 13). If related to recommended activities the cross reference shall be included in the recommendation paragraph described above. If additional room for comment(s) is/are required please provide the additional comment in Item 14 in or below the Labor Report Section of the form.

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LABOR REPORT/COMMENT AREA.

This is the preprinted labor report section and the open area and/or on the back of the last page, Item 14.

The ADEM Field Team Lead completes this section.

Item 14 provides additional area to provide detailed continuation of comments that cannot be provided in the area provided for Items 6, 7, and 8. Continuations of comments provided in this area shall be cross referenced to the inspection task number(s) (Item 13). In addition, use this area to provide comments related to either element number(s) (Item 12) or general inspection notes, including listing additional personnel participating in inspection and documenting weather conditions.

Item	Hard Copy field note documentation
14	Document the date and time the inspection is started and finished. During electronic data entry, the inspection start date/time will be recorded as “Responded” and the inspection finish time will be recorded as “Completed”. For ease of use with the MCExpressLE web application, it is recommended that the times be documented at the closest 5 minute increment from the actual time (e.g. if actual time is 2:43, document 2:45)

ATTACHMENT 1
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Los Alamos National Lab

1 **Work Order CAP-53066**
Corrective Action Projects
Printed 9/15/2016 - 4:44 PM (Duplicate Copy)

Maintenance Details

Requested By: Smith test, Shannon on 9/15/2016 4:43:00 PM
Taken By: Smith test, Shannon
Procedure: Inspection for EP Watershed, Retention, and No Exposure Controls (EP-DIV-GUIDE-20211)
Last PM: N/A

Target: 4 9/30/2016
Priority/Type: / Inspection

2 Corrective Action Projects
Watershed Monitoring
Pueblo Canyon Grade Control Structure

Contact: Smith test, Shannon
Phone:

3 **Reason:** Q3 Inspection for EP Watershed, Retention, and No Exposure Controls.

Tasks 5

#	Description	6 Rating	7 Meas.	8 Initials	9 Failed	10 N/A	11 Complete
	EMBANKMENTS 12						
13 20	**Embankment [P GCS Embankment]** Inspect u/s slope for vegetation/erosion				☐	☐	☐
30	**Embankment [P GCS Embankment]** inspect u/s slope for breaching/slides/cracks (or damaged gabion mattresses)				☐	☐	☐
40	**Embankment [P GCS Embankment]** Inspect u/s slope for undermining/erosion				☐	☐	☐
50	**Embankment [P GCS Embankment]** Inspect abutment for vegetation/erosion				☐	☐	☐
60	**Embankment [P GCS Embankment]** Inspect abutment for sloughs/slides/cracks (or damaged gabion mattresses)				☐	☐	☐
70	**Embankment [P GCS Embankment]** Inspect abutment for seepage/wetness				☐	☐	☐
80	**Embankment [P GCS Embankment]** Inspect abutment for presence of trash/debris				☐	☐	☐
90	**Embankment [P GCS Embankment]** Inspect d/s slope for vegetation/erosion/riprap.				☐	☐	☐
100	**Embankment [P GCS Embankment]** Inspect d/s slope for rodent burrows				☐	☐	☐
110	**Embankment [P GCS Embankment]** Inspect d/s slope for sloughs/slides/cracks (or damaged gabion mattresses)				☐	☐	☐
120	**Embankment [P GCS Embankment]** Inspect d/s slope for seepage/wetness				☐	☐	☐
	PONDS 12						
	OVERFLOW WEIR STRUCTURE 12						
13 150	**Overflow Weir Structure [P GCS Overflow Weir Structure]** Inspect u/s face of weir structure for deteriorated joints or bulging gabion baskets				☐	☐	☐
160	**Overflow Weir Structure [P GCS Overflow Weir Structure]** Inspect u/s face of weir structure for cracking/spalling or gabion basket separation/displacement				☐	☐	☐
170					☐	☐	☐

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13

	Overflow Weir Structure [P GCS Overflow Weir Structure] Inspect u/s face of weir structure for presence of trash/debris						
180	**Overflow Weir Structure [P GCS Overflow Weir Structure]** Inspect crest of weir structure for deteriorated joints or bulging gabion baskets						
190	**Overflow Weir Structure [P GCS Overflow Weir Structure]** Inspect crest of weir structure for cracking/spalling or gabion basket separation/displacement						
200	**Overflow Weir Structure [P GCS Overflow Weir Structure]** Inspect crest of weir structure for poor alignment						
210	**Overflow Weir Structure [P GCS Overflow Weir Structure]** Inspect crest of weir structure for presence of trash/debris						
220	**Overflow Weir Structure [P GCS Overflow Weir Structure]** Inspect d/s face of weir structure for deteriorated joints or bulging gabion baskets						
230	**Overflow Weir Structure [P GCS Overflow Weir Structure]** Inspect d/s face of weir structure for cracking/spalling or gabion separation/displacement						
240	**Overflow Weir Structure [P GCS Overflow Weir Structure]** Inspect d/s face of weir structure for seepage/piping						
250	**Overflow Weir Structure [P GCS Overflow Weir Structure]** Inspect d/s face of weir structure for presence of trash/debris						

STANDPIPE 12

SPILLWAY 12

13

280	**Spillway [P GCS spillway]** Inspect flow-way for improper alignment						
290	**Spillway [P GCS spillway]** Inspect flow-way for deterioration						
300	**Spillway [P GCS spillway]** Inspect for presence of trash/debris						
	OUTLET						
320	**Outlet [P GCS Outlet]** Inspect outlet for seepage/piping						
330	**Outlet [P GCS Outlet]** Inspect outlet for undercutting						
340	**Outlet [P GCS Outlet]** Inspect outlet for erosion						
350	**Outlet [P GCS Outlet]** Inspect for presence of trash/debris						
360	**Outlet [P GCS Outlet]** Inspect for amount of sediment present						
370	**Scourstop [PGC Outlet Scourstop]** Inspect scourstop for buckling/movement						
380	**Scourstop [PGC Outlet Scourstop]** Inspect scourstop for scouring/erosion/settlement						
390	**Scourstop [PGC Outlet Scourstop]** Inspect rip rap border of scourstop						

SPURS 12

13

410	**Spur [PGC Spur 1]** Inspect rip rap for undermining/slides						
420	**Spur [PGC Spur 1]** Inspect rip rap for displacement/launches						
430	**Spur [PGC Spur 1]** Inspect redi-rock for rock displacement						

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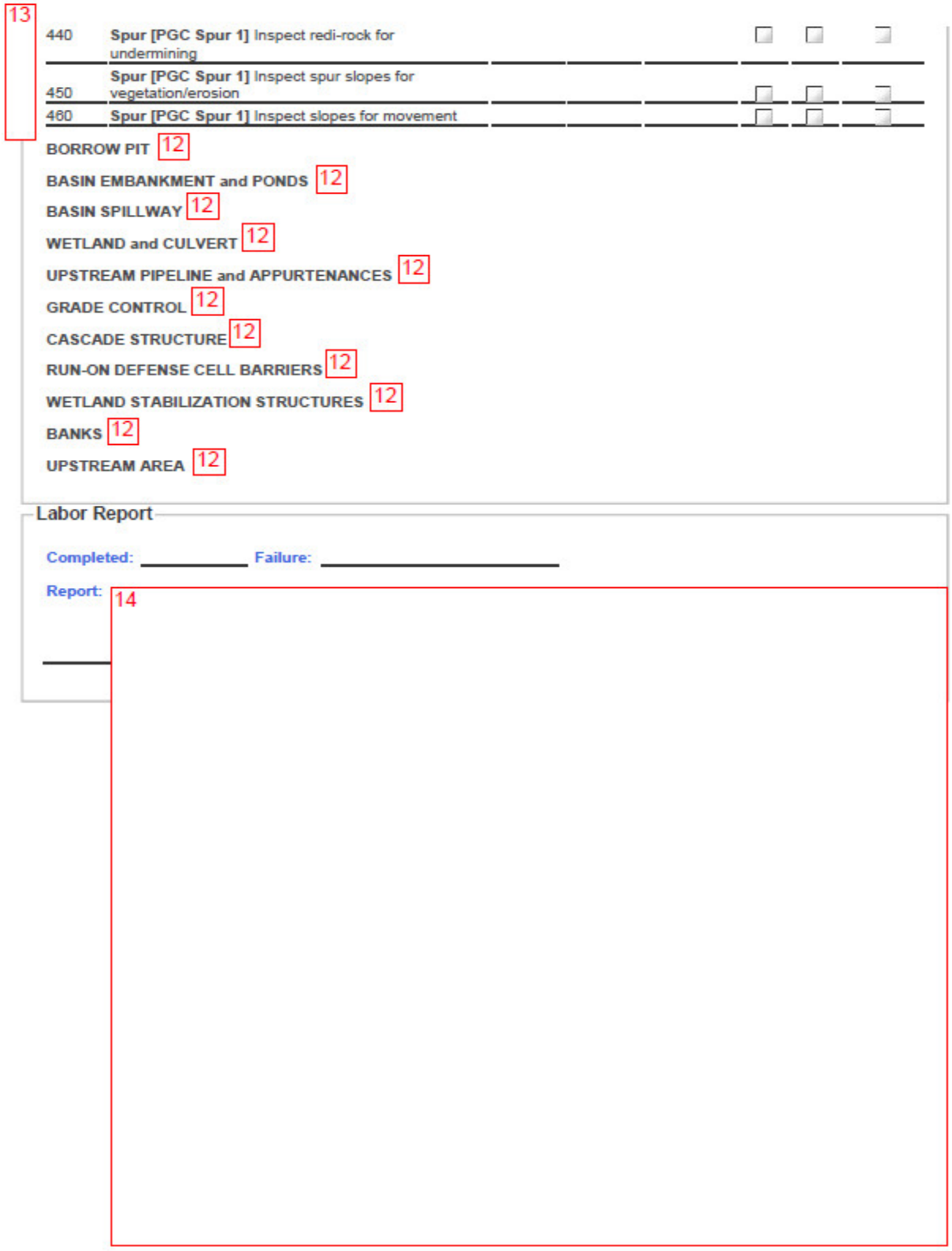

ATTACHMENT 2
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Example Electronic Watershed Structure Inspection Form with Guidance

The ADEM Field Team Lead will complete electronic data entry either at inspection with approved government issued hardware, or as a desktop exercise after completion of inspection and prior to final version printing of the work order for certifying signature.

Item	Electronic Data Entry Instruction
15	Log into the MCExpress LE application at mcxle.maintenanceconnection.com on either a Chrome or Safari web browser, then open the appropriate work order from the My WO's page. *Note: Mozilla Firefox is not compatible with the maintenance connection applications.*
16	Select "Responded" from the Status dropdown. *Note: If hard copy field note documentation was used, amend date/time as needed to match the date/time documented in Item 14.*
17	Verify and document if each inspection task (Item 13) was performed by selecting either Failed (see Item 9) or Complete (see Item 11) as appropriate. Note, if the inspection task is selected "N/A" on the hard copy (see Item 10), you will need select N/A in the Maintenance Connection desktop environment prior to printing the final version.
18, 19	Provide comments for each Item 13, as appropriate (see Items 6, 7, and 8). If monitoring, repair, additional investigation is being recommended the comments shall be entered as follows: • Enter either "Monitor", "Repair", "Replace", or "Investigate" in the Reading Final field (Item 18) ……" Additional sentences may follow the first statement to provide further clarification if necessary. • Enter additional information/comments (e.g. No action recommended) or further clarification of first statement if necessary in the Comments field (Item 19). Also use this field to document photograph IDs taken, photograph IDs shall be cross referenced to either element number (s) (Item 12) or inspection task number(s) (Item 13). If related to recommended activities the cross reference shall be included in the recommendation paragraph described above.
20	Enter any additional inspection notes (see Item 14) in the "Labor Report" field (Item 20).
21	Select "Completed" from the Status dropdown Item 21. *Note: If hard copy field note documentation was used, amend date/time as needed to match the date/time documented in Item 14.*
22	Navigate back to the "My WO"s page. Using the "Menu dropdown", select "Sync". All Work Orders placed in Completed status (see Item 22) since the last synchronization will be uploaded to the Maintenance Connection database. Log out of the application.

ATTACHMENT 2
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Item	Electronic Data Entry Instruction
23	From your desktop, log into the Maintenance Connection application at maintenanceconnection.com on either a Chrome or Internet Explorer browser, then open the appropriate work order from the Work Order Module. *Note: your user name and password is the same used to log into MCExpress LE (see Item 15). Mozilla Firefox is not compatible with the maintenance connection applications.*
24	Navigate to the Tasks tab of the work order to confirm/review answers to all tasks. Populate any inspection tasks with "N/A" as necessary (see Items 10 and 17) at this time.
25	Remove any header elements that don't apply to the inspection (see Item 12) by left clicking the mouse on the header line, then selecting "Remove". After you have finished, select "Save" in the upper right hand corner.
26	Navigate to the Attach tab of the work order, then the Images Subtab to add photo images. Select the Add (multiple) button to batch upload photos.
27	From your computers library, navigate to the location of the photos on the eden.lanl.gov server. Select all photos to be uploaded and drag and drop into the Add Images(s) dialog box. *Note: image sizes should be less than 1 Mb for optimal printing.*
28	After images have loaded, amend the image "Date" to be the date the photo was taken, and select the print order for the image. Select "Save" after updates. Repeat for all images attached.

OBTAINING CERTIFICATION AND RECORD SUBMITTAL

The ADEM Field Team Lead is responsible for documenting page #s (Item 31), printing a final hard copy, providing an inspection signature and certifying signatures (Item 33) and submitting records/retaining field copy of inspection form as appropriate.

Item	Printing and Record Submittal Instruction
29	To print a final copy of the work order navigate to the Report tab. Select the Work Order (Statement) tab, then the Tools widget in the upper right hand corner. Select the "Print" option.
30	Print to the Adobe PDF printer and save in the appropriate subfolder within IP Stormwater Data\05_Project Eng_Enhanced Projects\11.Grade Control Structures\GCS Inspections on the eden.lanl.gov server.
31	Add page numbers to the work order using the "Header & Footer" tool in Adobe Acrobat. Select footer to appear in Right Footer Text and enter the Work Order ID (see Item 1), then select "Insert Page". Select OK.
32	Add image captions/labels as needed using editing tools within Adobe Acrobat.
33	Print a hard copy for signature. The Lead ADEM Field Team Lead should provide a signature, name and their Z# in the first line provided and the certifier should sign on second line provided.

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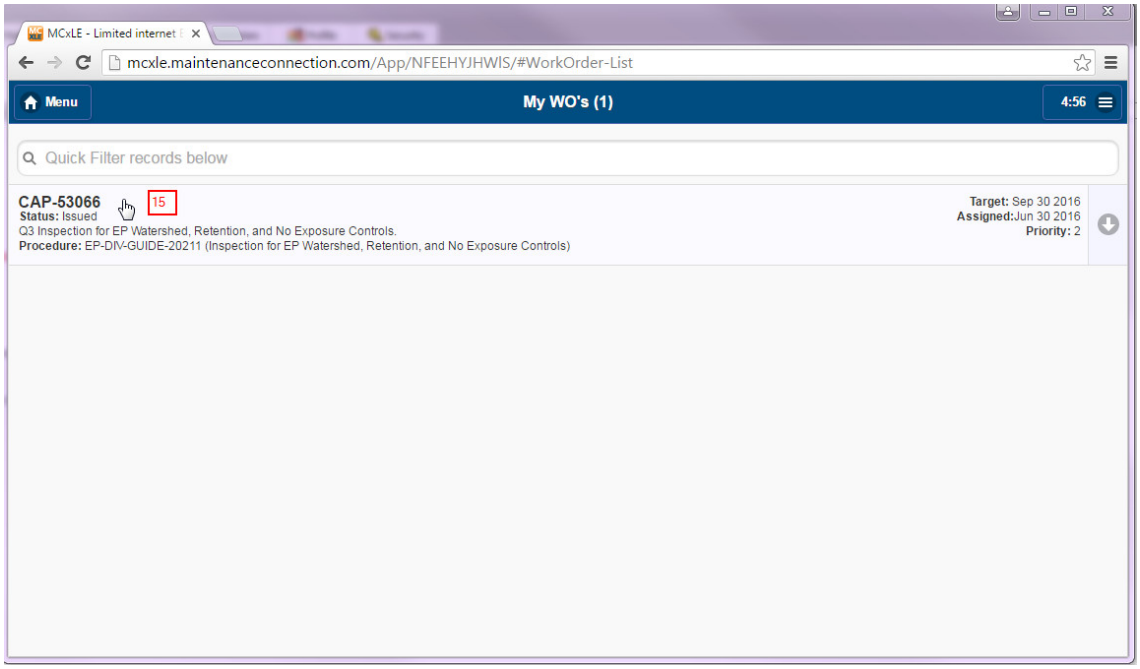

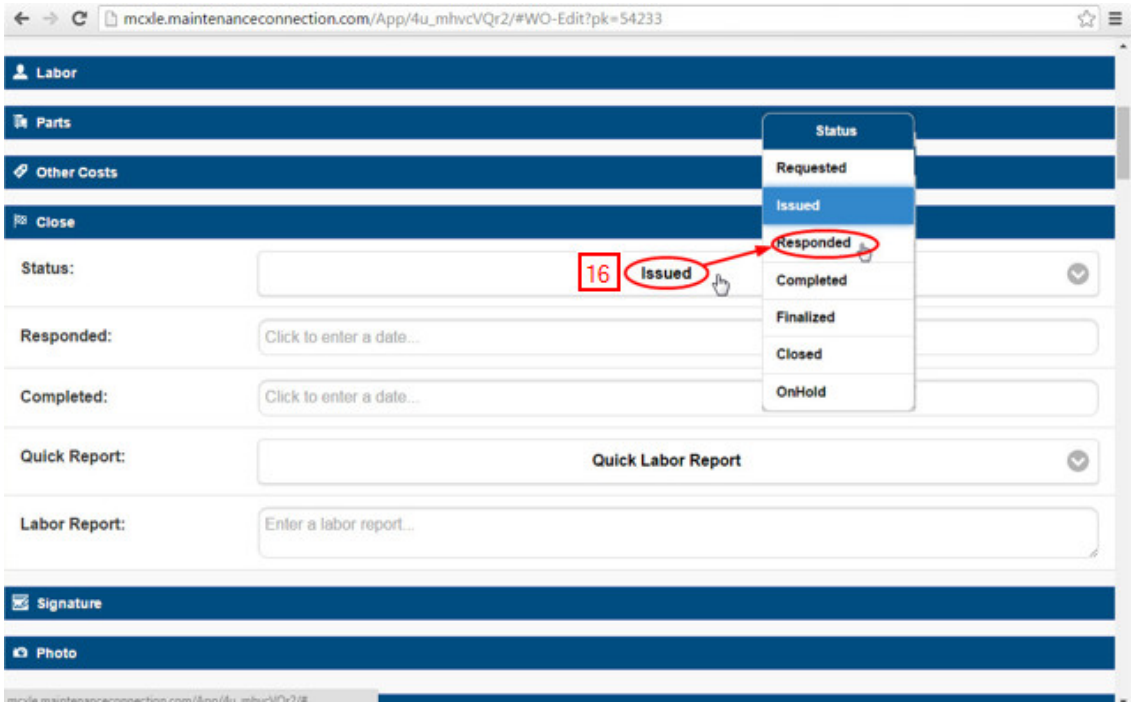

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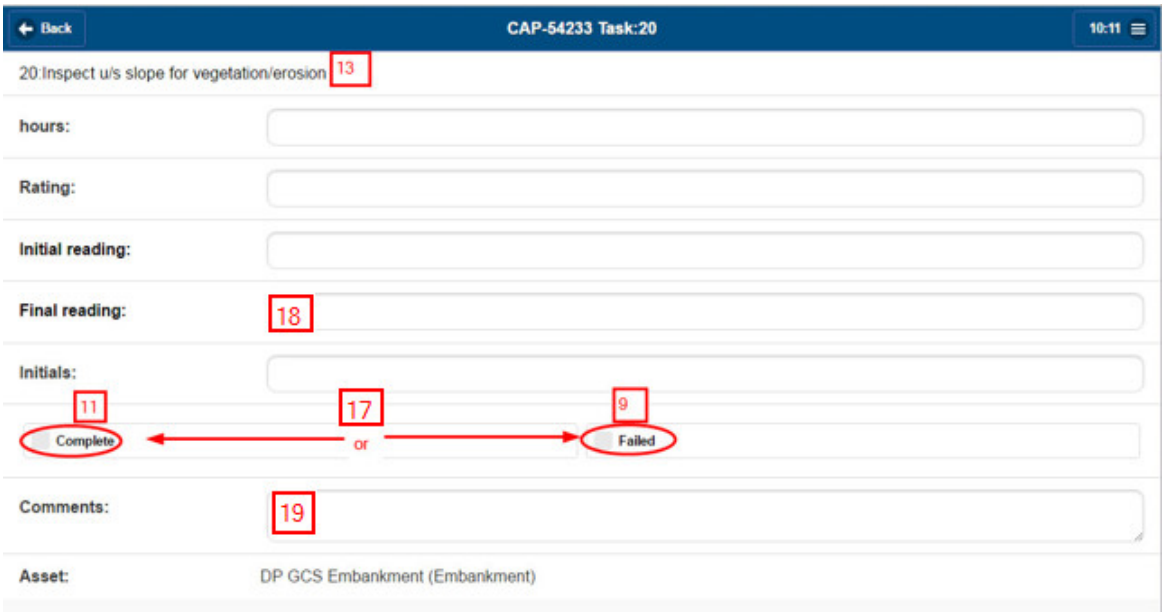

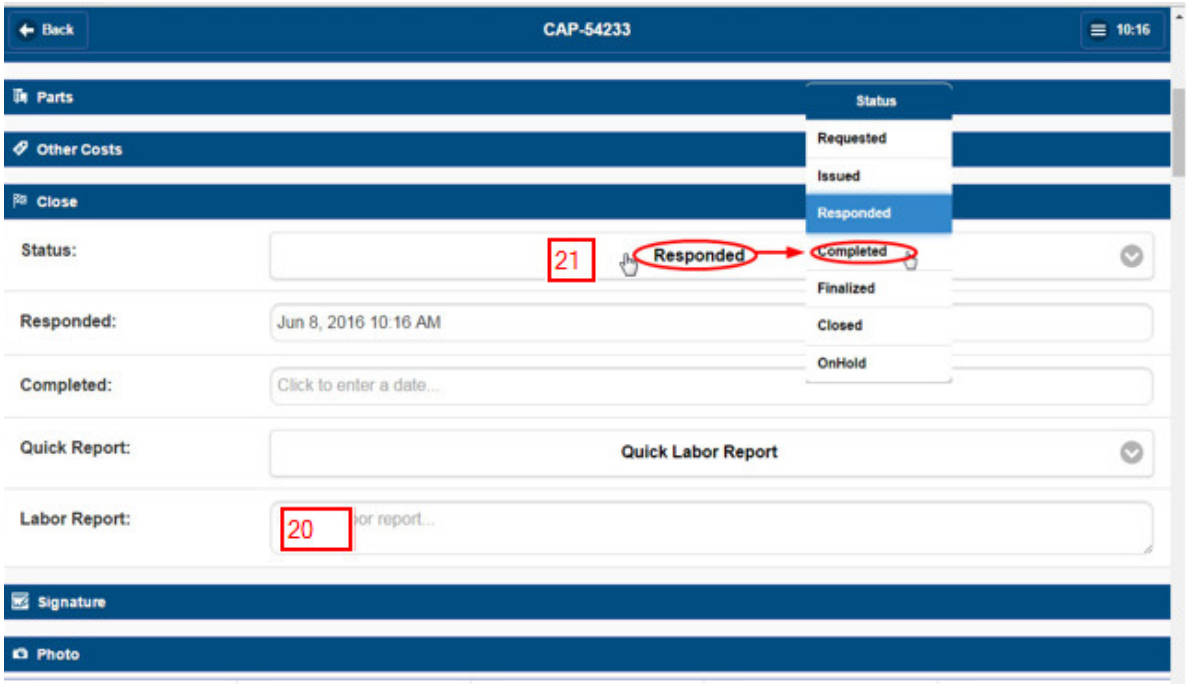

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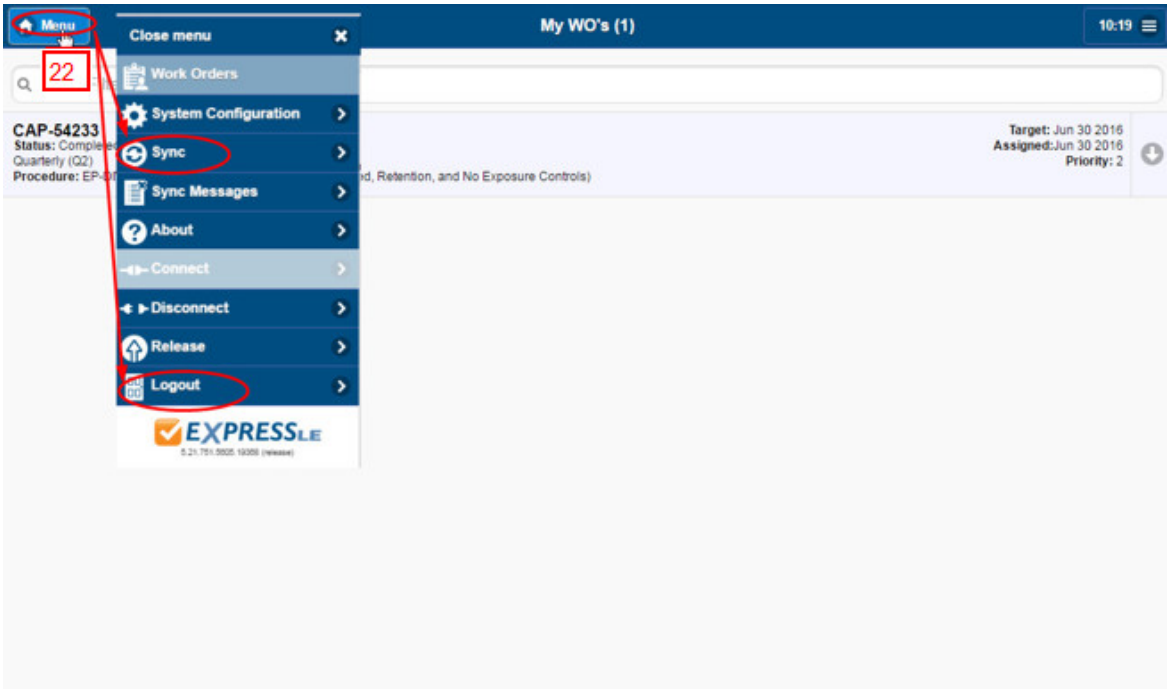

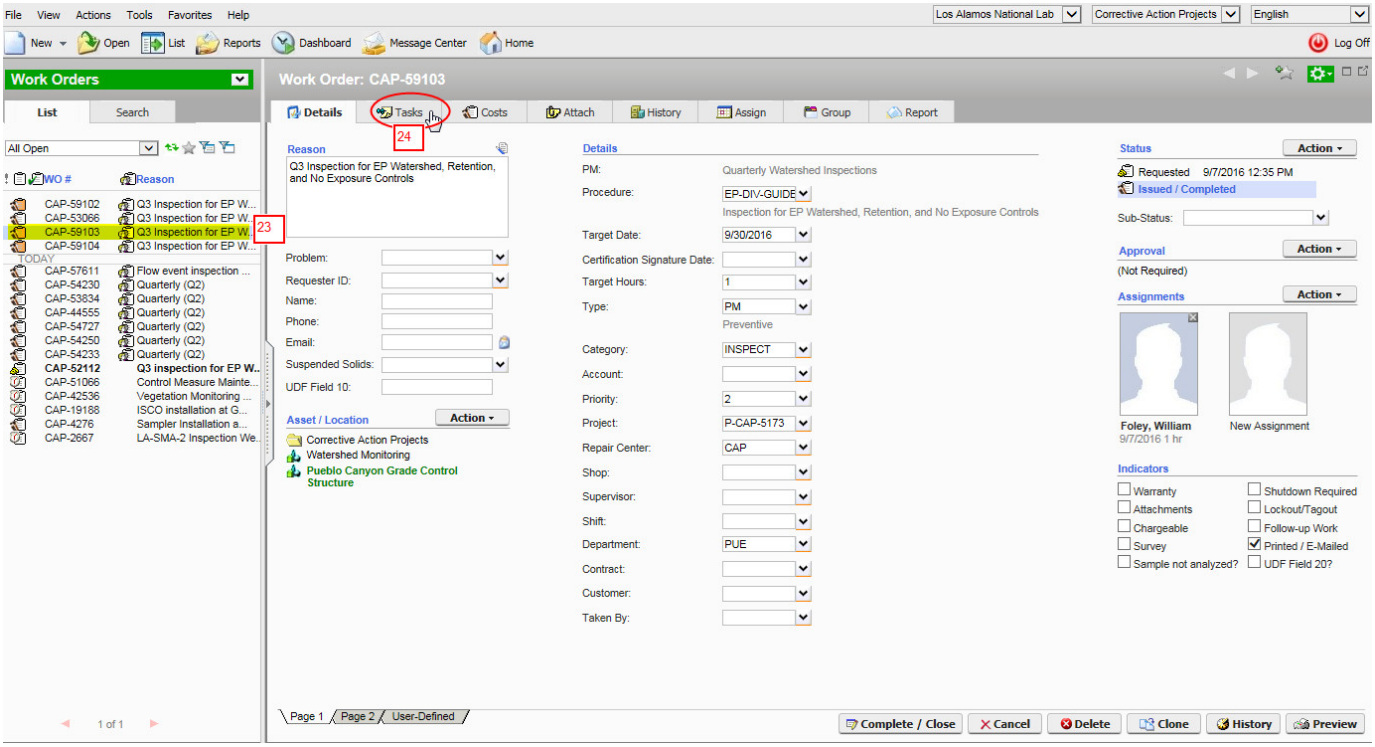

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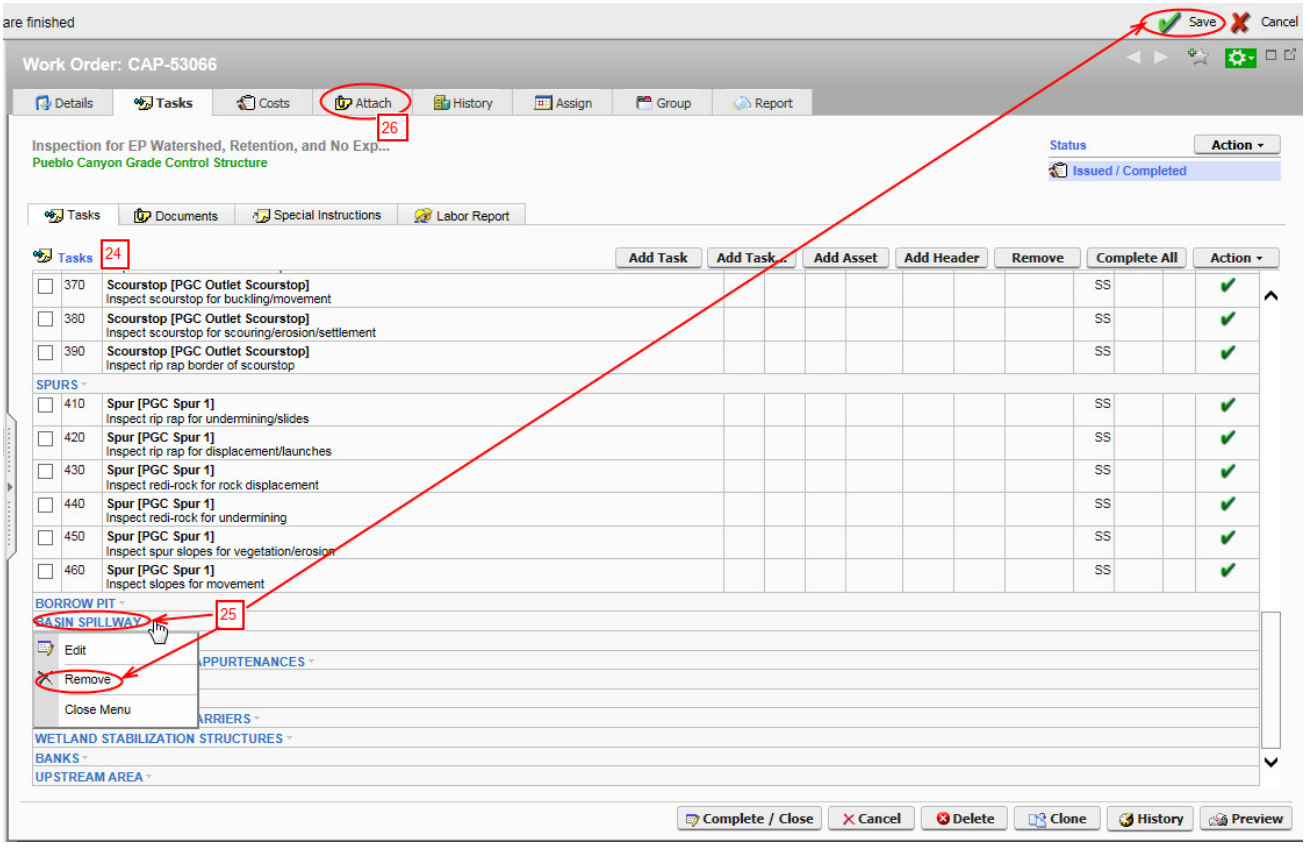

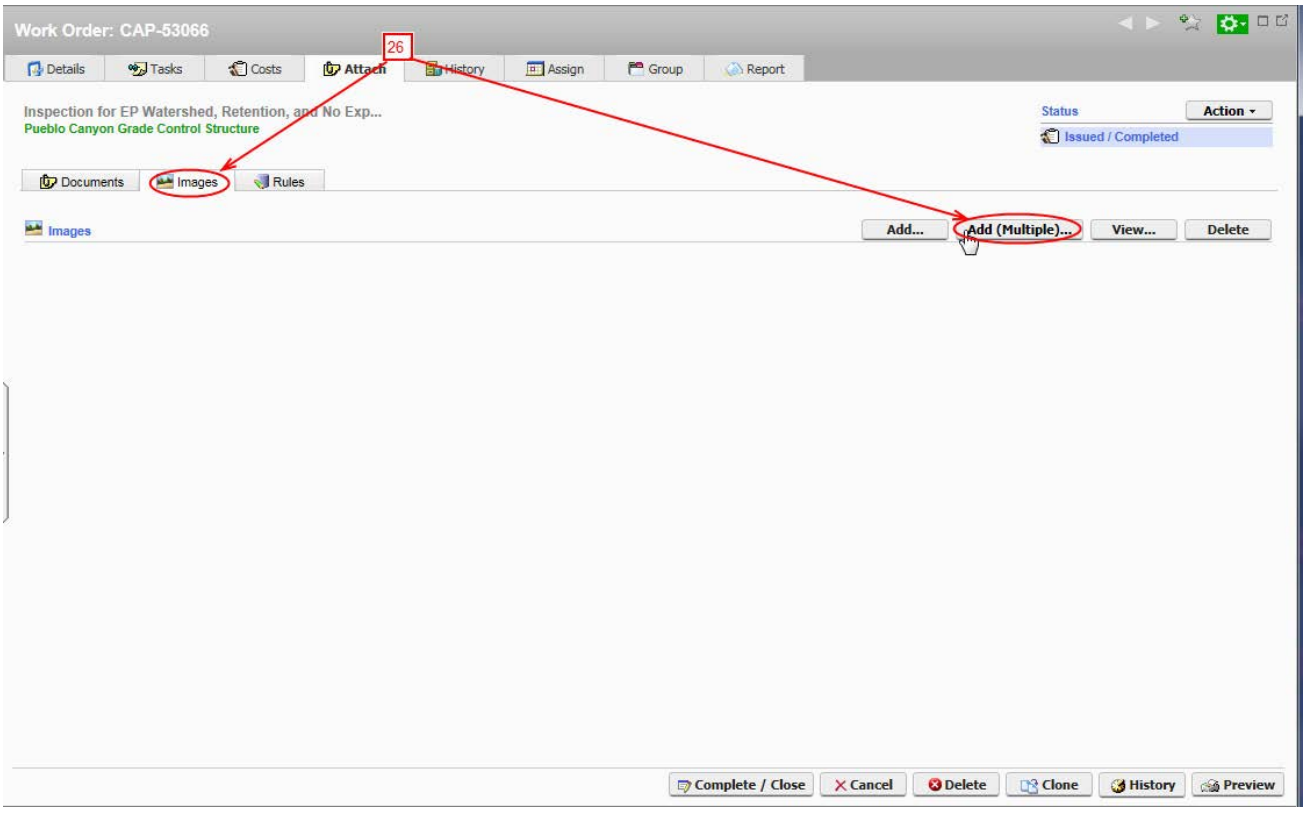

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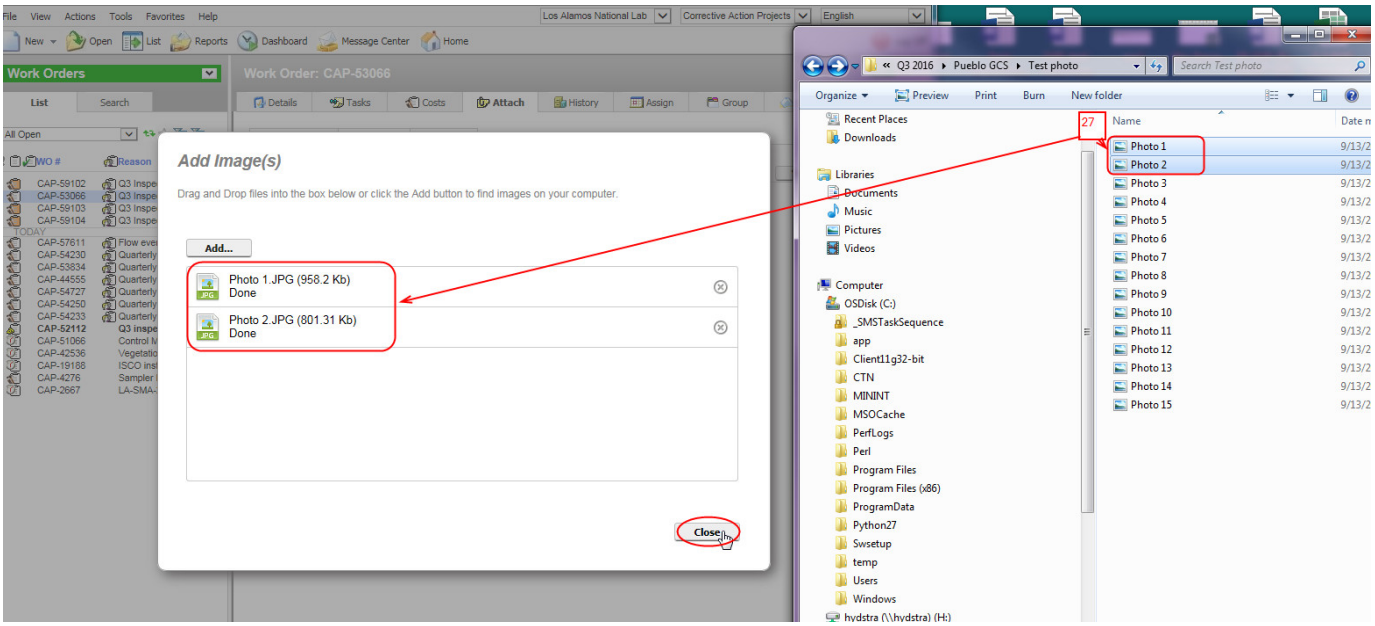

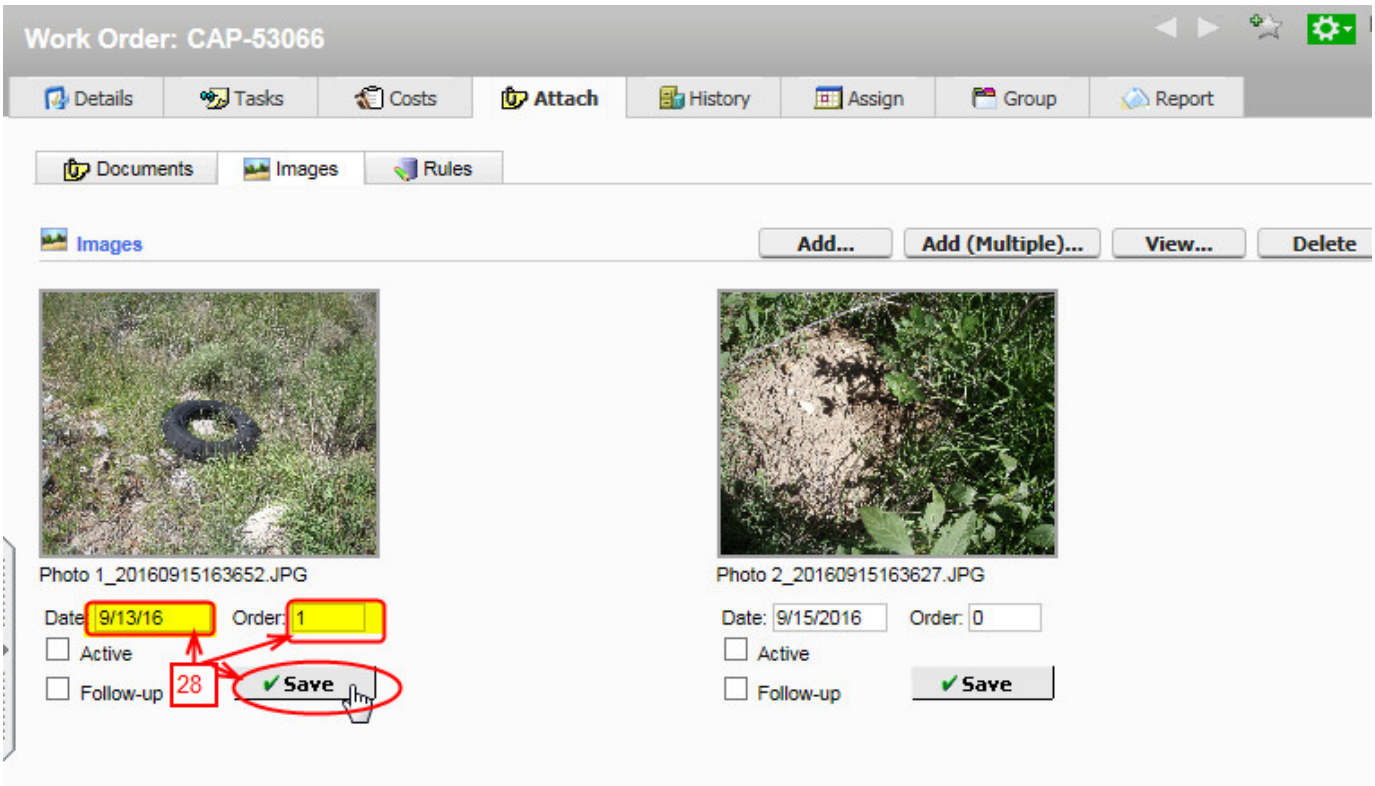

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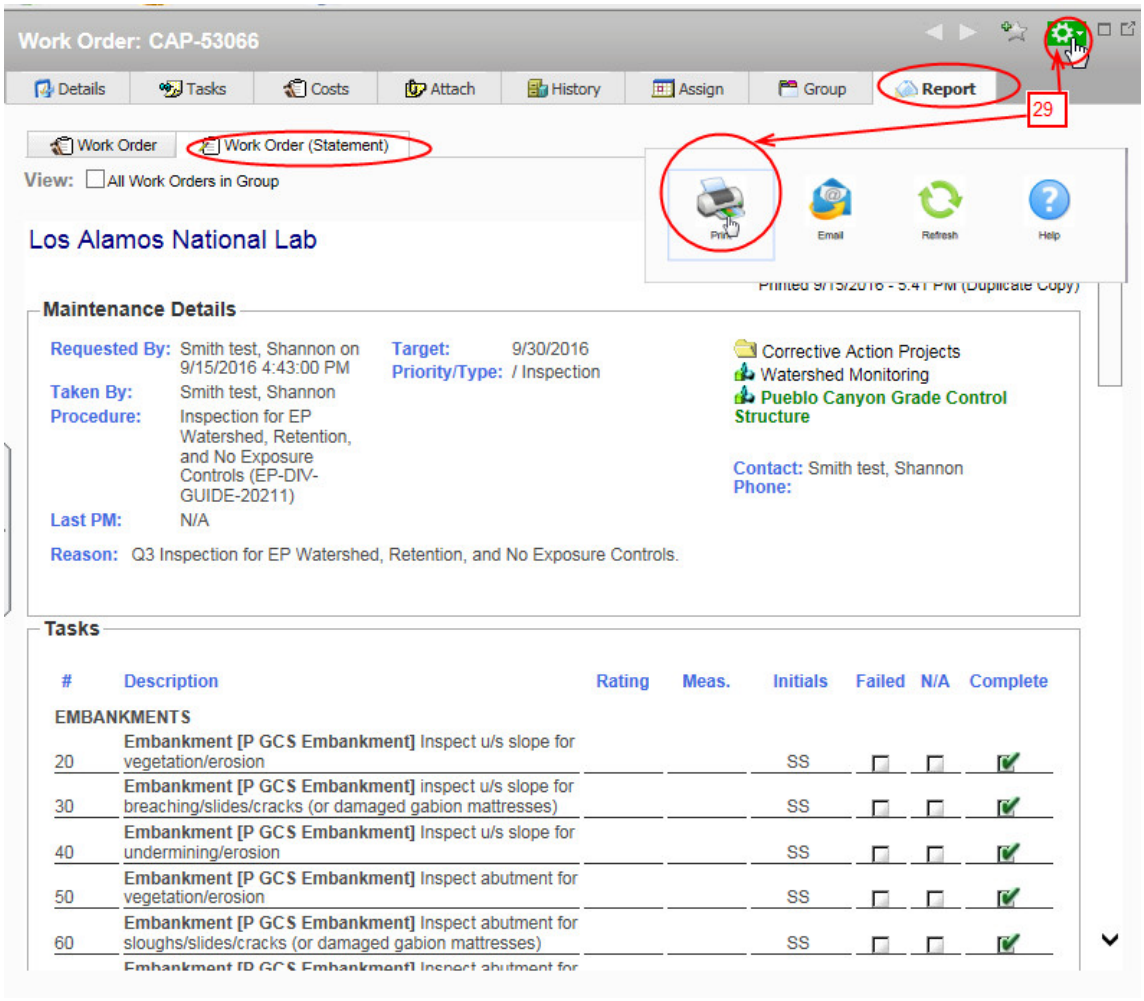

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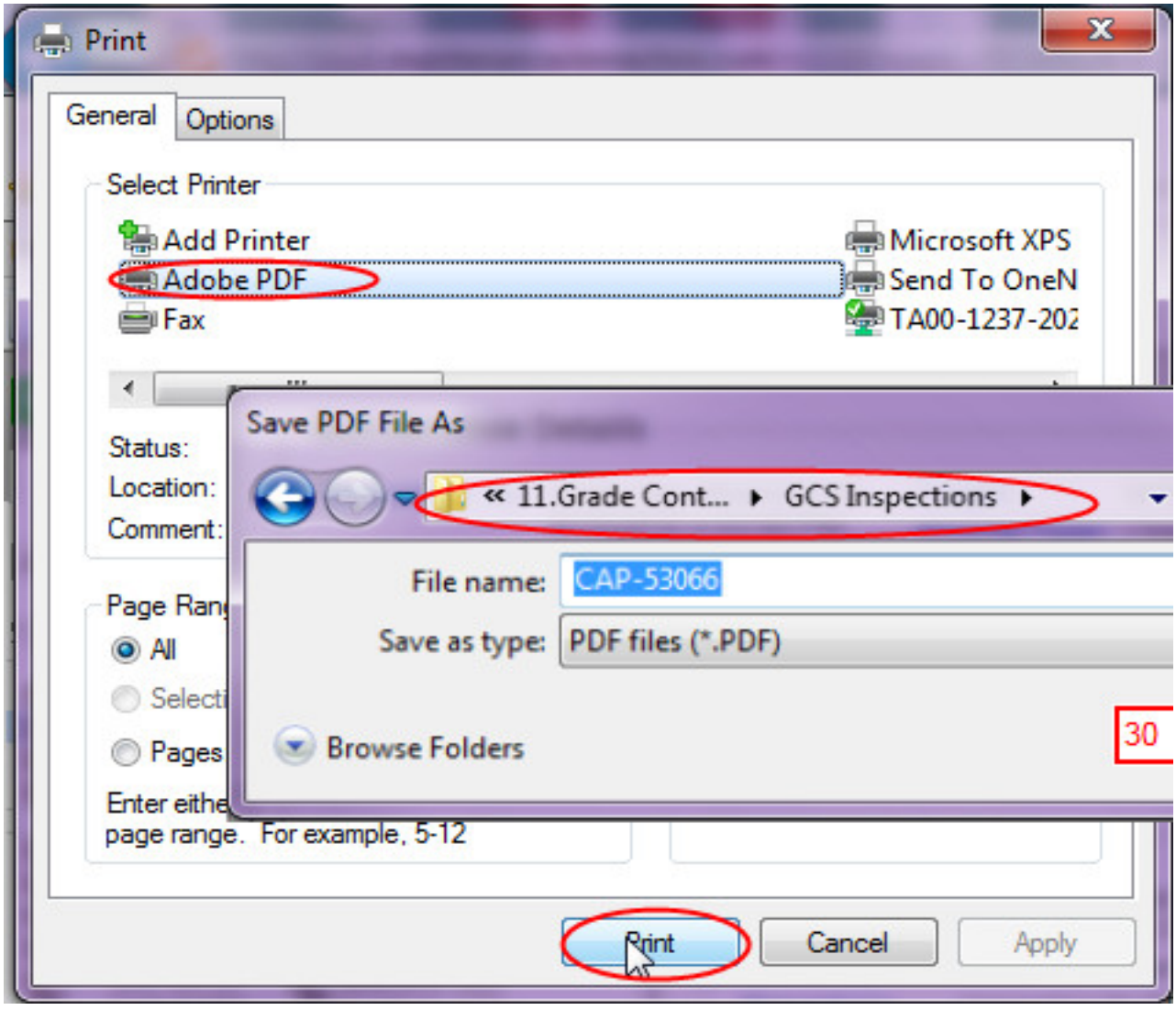

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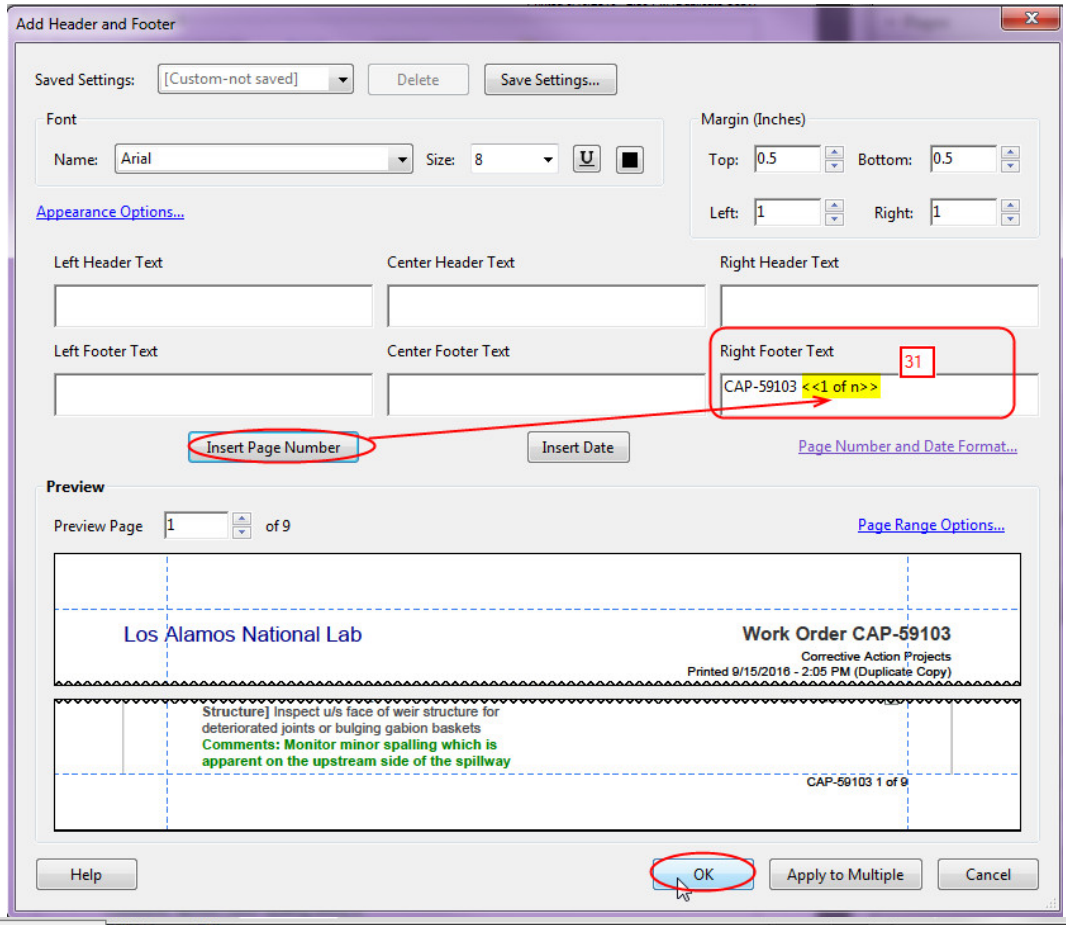

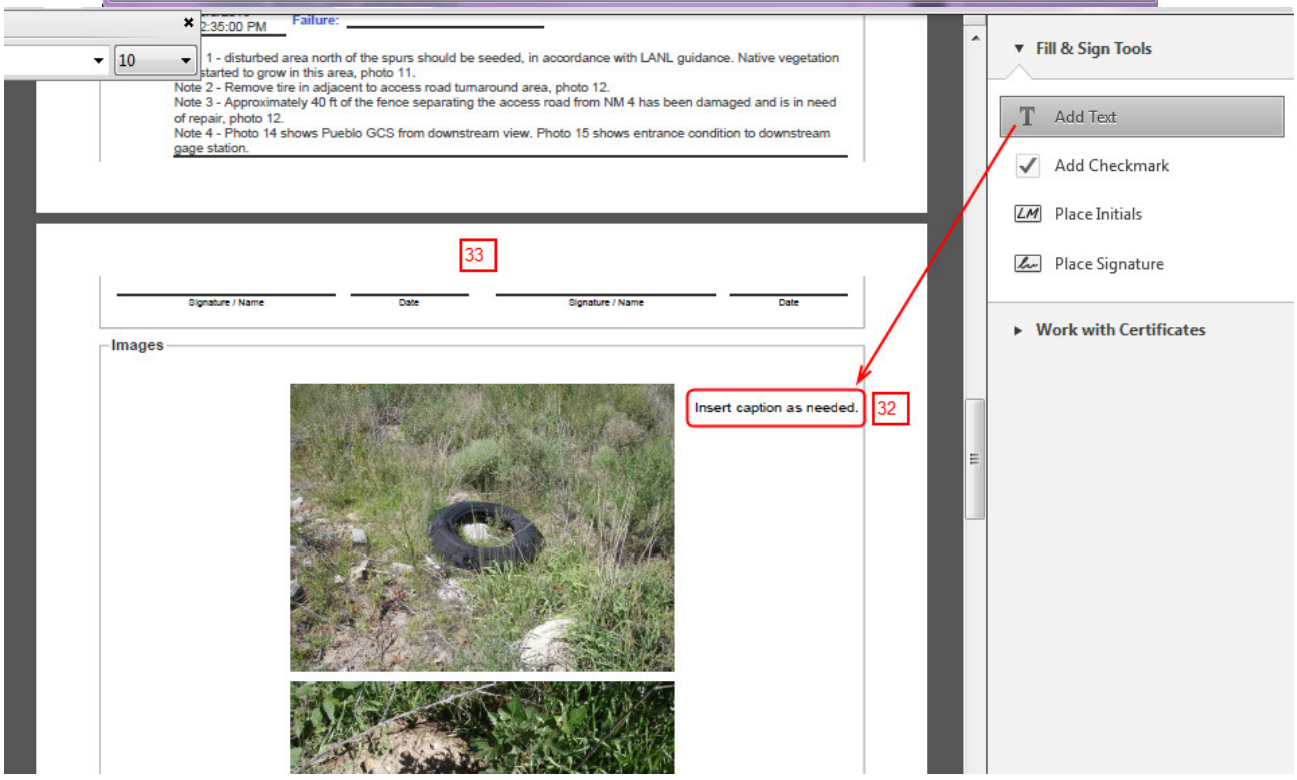

ATTACHMENT 3

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Existing Watershed Controls - Gage Station Inspection Assignment

Watershed Control[a]	Gage Station[b]	Inspection Schedule[c]	Completion Date of Major Activity
Pueblo Wetland Stabilization Structure	E059.8	Annual	9/2015[d]
Pueblo Grade Control Structure	E060.1	Quarterly	1/2016[e]
DP Grade Control Structure	E039.1	Annual	1/2010[d]
LA Sediment Ponds	E026	Quarterly	1/2016[e]
LA Weir	E050.1	Annual	2000[e]
Sandia Grade Control Structure	E123	Annual	10/13[e]

Notes:

a. Watershed controls identified are those which are listed in the MainConn database on November 1, 2016. This list may be modified after this date.
b. Associated gage stations are identified in the MainConn database on November 1, 2016. This list may be modified after this date.
c. Inspection schedule are those in effect on November 1, 2016. The inspection schedule may be modified based on the completion date of major activity identified in this table and the guidance provided in Section 4.1
d. Month/date initial construction completed.
e. Month/date last major activity completed.