



September 28, 2012

Colorado Oil and Gas Conservation Commission  
1120 Lincoln Street, Suite 801  
Denver, CO 80203

Attn: Mr. Alex Fischer, P.G.  
Environmental Supervisor – Western Colorado

Re: **WPM Estimate of Probable Pit Closure Costs**  
**Estimate Number – 1105-1202**  
Review of application materials prepared by SJ Interests.

Facility ID: **#421065 – McIntyre Flowback Pits 1 and 2**

Dear Mr. Fischer,

Western Project Management (WPM) is pleased to provide the following review narrative and estimate for the probable closure of the above referenced impoundment facility.

Per your request, we have reviewed the available project documentation. The WPM Estimate of Probable Pit Closure Costs is attached for your use.

The general basis for this estimate includes the following assumptions:

1. The WPM total cost estimate for the scope of work is \$375,402.59 for the full closure and reclamation of the site.
2. We have provided an optional cost to remove the existing poly pipe system for an estimated cost of \$10,890.00.
3. Takeoff quantities, labor rates, man-hours, and markups are all detailed in the attached estimate tabs.
4. The proposed operating life of the referenced facility is anticipated to be twenty years therefore, we cannot assume that any waste disposal facility or municipal water treatment plant will be available at their current locations when closure is initiated.
5. Due to the fact that it is impossible to accurately plan for escalation for this reclamation project over the next twenty years, WPM elected to forgo including any escalation or inflation factor with this estimate.
6. WPM suggests that this estimate be updated every five years to give the State a current cost picture.

The following is a summary, by estimate tab section, of the estimate basis:

1. Mobilization and Demobilization
  - a. For the purposes of this estimate, WPM assumed using the services of a Front Range or Western Slope Colorado contractor and have included rates and costs for mobilization and demobilization consistent with that market.
  - b. WPM anticipated that it will take approximately one week to accomplish the mobilization efforts which include transportation of all equipment to the site as well as set up of the field office and erosion control measures.
  - c. WPM has included costs for one week of demobilization as well.
2. Soils Sampling for Contamination
  - a. WPM has included additional cost for soils sampling on site for an estimated 15 locations (hand auger).
  - b. The sample depth will be taken from the surface to 2 feet below.
  - c. Laboratory costs are included in the basis of this estimate.
  - d. The shallow soils testing will occur prior to the reclamation efforts initiating.
3. Surface and Ground Water Well Testing for Contamination
  - a. WPM has assumed that five existing 2" diameter monitoring wells drilled to 50 feet below grade will be sampled.
  - b. Three on-site or close proximity (-1/4 mile) domestic well will be sampled.
  - c. Six seeps or springs in the area will be sampled.
4. Monitoring Well Abandonment
  - a. The 5 existing 2" inch monitoring wells that are drilled to 50 ft in depth will be abandoned in accordance with the State of Colorado State Engineers Monitoring Well Abandonment Requirements.
5. Demolition and Disassembly
  - a. All operator owned or operated monitoring equipment will be removed by the operator, prior to closure work.
  - b. Remaining pipe, culverts, fence, tanks, miscellaneous metals, etc., will be either recycled or hauled off site for disposal unless otherwise specified.
  - c. Disposal is estimated to take approximately 1 week with an allowance of 40 tons of non hazardous solid waste. Waste to include non-recycled fence (security and bird netting), concrete, tanks, miscellaneous piping and debris.
  - d. If the alternate is taken for the removal of the poly pipe, there is an additional 13 tons of waste associated with this work item.
6. Disposal of Pond Fluids
  - a. Waste water detention ponds are assumed to be filled to 100% of capacity when closure work begins.
  - b. For the purposes of this estimate, waste water will not be classified as hazardous materials.
  - c. Waste water 97% onsite disposal at the Federal 24-2 injection well (API# 05-051-06084) via the existing poly pipe system. This is the same as 3 & 4. Is this OK?

- d. 3% of the on-site waste water will be hauled to an offsite treatment facility within 60 minutes haul time from site.
- e. WPM assumes that the liquid waste vacuum truck capacity is 130 barrels or 5460 gallons capacity. This is an industry standard tank capacity.
- f. WPM assumes that the sludge will meet the requirements of **Table 910-1**. With that assumption, the majority of the sludge at bottom of pond will be integrated into native soil material on site.
- g. No sludge will be classified as hazardous waste.
- h. Some sludge will be hauled to a waste disposal facility.
- i. The waste water and sludge quantities are detailed on the Disposal of Pond Fluids estimate tab sheet.

#### 7. Removal and Disposal of Pond Liners

- a. The quantity of liner layers and square footages have been taken from the pit design cross section dated 10/22/2010 and prepared by SJ Interests.
- b. WPM assumed that each layer of membrane will be cut, sections rolled and loaded separately prior to hauling off site for disposal.
- c. WPM assumes equal amount of dry sludge will be on the liner; this quantity is factored into the 65.5 tons of disposed waste.
- d. WPM assumes that the sludge on the liner will meet the requirements of Table 910-1.
- e. There are currently at least three operating waste disposal sites within an 85 mile radius of the site. The referenced local sites are:
  - i. Pitkin County Landfill
  - ii. Montrose County Landfill
  - iii. Delta County Landfill
- f. For the purposes of this estimate and in order to protect the future cost exposure for the State, the disposal site located the furthest distance from the project was used in calculating haul distance. (Montrose County Landfill)

#### 8. Earthwork

- a. All soils will be used onsite in the existing condition.
- b. No import of off site soils will be required for the closure.
- c. No soil will be classified as hazardous. No cost provisions for removal or treatment of hazardous soils have been included
- d. WPM assumes that the onsite Class 6 road base and Type L rip rap will be tilled into the native soil.
- e. Final earthwork grade is assumed to be +/- 3 – 10ths of a foot therefore, Bluetop grading is not included in the scope of this work.
- f. Seeding consistent with a typical reclamation project is included.
- g. For the purposes of this estimate the following classes of heavy equipment performance data per the Caterpillar Performance Handbook Edition 41, was utilized (unless otherwise noted):
  - i. Caterpillar D8T bulldozer – 1 each
  - ii. Caterpillar 627G scrapers – 2 each
  - iii. Caterpillar 815F sheepsfoot compactor
  - iv. Caterpillar 16M blade

- v. Caterpillar 446b backhoe
- vi. Terex TH644C Reach Forklift (per Terex manufacturer's data sheet).

9. Site Management Costs

- a. Estimated costs for site personnel and contractor general conditions are included for the required scope.

10. Schedule

- a. A planning schedule is included for reference.

11. Labor Rates

- a. Labor classifications and burden is detailed in the estimate tabs. Most of the labor rates have been taken from the recent Mesa County, Colorado Davis Bacon Wage Determination dated January 06, 2012 and the Gunnison County, Colorado Davis Bacon Wage Determination dated January 13, 2012.

Additional estimate backup and assumptions are detailed on the corresponding estimate tabs. This concludes WPM's efforts for a third party review and estimate for the above referenced project.

Thank you for the opportunity to provide this service to the State of Colorado. Please contact me via email at [jag@western-pm.com](mailto:jag@western-pm.com) or by phone at 970-674-1618 for further clarification or with questions.

Best regards,

John Goad, Jr.  
Senior Project Manager  
Western Project Management

Attachments - (1) WPM Estimate of Probable Pit Closure Costs - McIntyre 1 & 2