BEFORE THE OIL AND GAS CONSERVATION COMMISSION
OF THE STATE OF COLORADO

IN THE MATTER OF ALLEGED VIOLATIONS OF THE RULES AND REGULATIONS OF THE COLORADO OIL AND GAS CONSERVATION COMMISSION BY **OXY USA WTP LP**, GARFIELD COUNTY, COLORADO	))))	CAUSE NO. 1V ORDER NO. 1V- DOCKET NO. 1102-OV-05

PROPOSED ORDER FINDING VIOLATION

FINDINGS

The Relevant Regulations

1. The rules of the Colorado Oil and Gas Conservation Commission ("Commission" or "COGCC") that were in effect during the period at issue, that is, from 2005 through 2008 (2 CCR 404-1, "Rules" or individually, "Rule"), included the following definitions:

a. "Production pits" were defined as "those pits used after drilling operations and initial completion of a well . . . and . . . produced water pits used to temporarily store produced water prior to . . . disposal, off-site transport, or surface-water discharge." 100 Series Rules.

b. "Special purpose pits" were defined as "those pits used in oil and gas operations, including . . . workover pits used to contain liquids during the performance of remedial operations on a producing well in a effort to increase production." Id.

c. "Sensitive area" was defined as "an area vulnerable to potential significant adverse groundwater impacts, due to factors such as the presence of shallow economically usable groundwater or pathways for communication with deeper economically usable groundwater; proximity to surface water, including lakes, rivers, perennial or intermittent streams, creeks, irrigation canals, and wetlands." Id. (Refer to the compilation of Rules in Attachment 1.)

2. During this period, the Rules required operators to:

a. "[M]ake a sensitive area determination . . . to evaluate the potential for impact to ground water and submit data evaluated and analysis used in the determination to the Director for the . . . [c]onstruction of production and special purpose pits." Rule 901.e.(2).

b. Submit a "Pit Construction Report/Permit, Form 15 . . . for prior Director approval for . . . "[p]roduction pits and unlined special purpose pits in sensitive areas." Rule 903.a.(1)B.

c. Line "[p]roduction pits in sensitive areas" and "[s]pecial purpose pits," except for certain emergency and flare pits that are not relevant to this proceeding. Rule 904.a.

3. These sensitive area determinations, pit permitting, and pit lining requirements were essential components of the COGCC regulations. For example:

a. The permitting of production and special purpose pits helps ensure that best management practices are used by operators to protect public health, safety, and welfare and the environment, including soil, waters of the state, and wildlife, from significant adverse environmental, public health, or welfare impacts from exploration and production ("E&P") waste.

b. The lining of production pits in sensitive areas and special purpose pits helps ensure that ground water resources are protected from the release of produced water and other E&P wastes that can contain, among other things, elevated concentrations of hydrocarbon compounds, chloride, sodium, and total dissolved solids.

4. Indeed, Rule 901.f. specified that "[u]nlined production and special purpose pits in sensitive areas are generally not approved."

OXY's Construction and Use of the Unlined Production Pit on the Cascade Creek #697-15-54 Well Pad

5. On April 26, 2005, the Director ("Director") of the COGCC approved an Application for Permit-to-Drill ("APD"), Form 2, for the Cascade Creek #697-15-54 Well (the "Well") (API No. 05-045-10687) located in the SW¼ SE¼ of Section 15, Township 6 South, Range 97 West, 6th P.M. (refer to location map in Attachment 2), submitted by OXY USA WTP LP ("OXY").

6. OXY spud the Well on May 23, 2005 and completed it on June 13, 2005. OXY used an unlined reserve pit during the drilling and completion of the Well (refer to the 2005 aerial photograph in Attachment 3).

7. On August 22, 2005, OXY began producing the Well. Production records submitted by OXY indicate that 20,556 barrels ("bbls") of water produced in association with hydrocarbons ("produced water") from the Well were placed in a pit located on the Well pad (refer to production report in Attachment 4). Those submittals used the water disposal code "P", which indicates that the water was placed in an "on-site pit" (refer to the COGCC Form 7 – Monthly Production Report in Attachment 5). Use of the pit to store produced water made the pit a production pit under the Rules.

8. The 2005 aerial photograph provided in Attachment 3 indicates that, at the time of initial production, the only pit on the Well pad was the former unlined reserve pit. The June 2006 aerial photograph provided in Attachment 6 indicates that the pit was still in use and contained fluids as of that date. The COGCC Staff contends that OXY began using the unlined reserve pit as a production pit on approximately August 22, 2005, and continued to use the pit for this purpose until July 30, 2008, when OXY removed the last fluid from the pit (refer to Attachment 7, Pit Fluid Accounting Sheet submitted by OXY on September 10, 2008).

9. In addition to using the unlined pit as a production pit, OXY also used it as a special purpose pit for completion and work over activities. This is evidenced by the haul ticket for the period of time from August 28, 2006 to October 7, 2006 (refer to Attachment 8), which shows that during this time 10,920 bbls of "flowback" fluid were removed from the unlined pit. OXY contends that, although the haul ticket states "flowback", the fluid removed was actually produced water.

10. The unlined production pit on the Well pad was located in an area vulnerable to potential significant adverse ground water impacts, and therefore it was located in a sensitive area under the Rules based on the following criteria:

a. The Well is and the unlined pit on the Well pad was located on a narrow ridge that is a divide separating the recharge areas for ground water and several springs and streams (refer to Attachment 9). The springs located east and northeast of the Well pad are sources of water for McKay Gulch, which is a tributary to Garden Gulch, which is in turn a tributary of Parachute Creek. The springs which are located southwest of the Well pad are sources of water for an un-named tributary of the East Fork of Baker Gulch.

b. The Well pad is underlain by the D Unit of the Uinta Formation. Boring logs made during the drilling of four monitoring wells (MW-1, MW-2, MW-3, and MW-4) installed by OXY on the Well pad indicate that the D Unit of the Uinta Formation is weathered and fractured, has bedding plane partings, and contains thin seams of coal with cleats. The bedrock is not uniformly moist or saturated, but the layers that are weathered and contain fractures, bedding plane parting, and thin coal with cleats contain the most moisture. This indicates that the D Unit of the Uinta Formation is fractured, that percolation and flow of ground water or other fluids occurs along these fractures, and that the fractures, partings, and cleats enhance the permeability of the bedrock; therefore, the Well pad is located in an area that is vulnerable to significant adverse impacts to ground water from spills and releases occurring during oil and gas operations (refer to Attachments 10, 11, 12, and 13 that contain boring logs for four monitoring wells, MW-1, MW-2, MW-3, and MW-4 respectively).

c. The ground water discharged from springs in the vicinity of the Well pad is shallow, economically usable, and very high quality ground water, which was used by ranchers for watering livestock and by wildlife.

11. Before discharging produced water and flowback fluids into the pit on the Well pad, OXY did not: submit a sensitive area determination to evaluate the potential for ground water impacts; submit a Pit Construction Report/Permit, Form 15; or line the pit. These omissions violated the Rules.

The Notice of Alleged Violation

12. On August 11, 2008, COGCC Staff issued a Notice of Alleged Violation ("NOAV") (NOAV #200193504) to OXY for operations at the Well pad. The NOAV had an abatement deadline of August 25, 2008. The NOAV cited violations of the following Rules:

a. Rule 209., which required operators to exercise due care in the protection of coal seams and water-bearing formations, with special precautions taken in drilling wells to guard against any loss of artesian water from the stratum in which it occurs and the contamination of fresh water by objectionable water, oil, or gas;

b. Rule 324A.a., which required operators to take precautions to prevent significant adverse environmental impacts to air, water, soil, or biological resources to the extent necessary to protect public health, safety and welfare and to prevent the unauthorized discharge of E&P waste;

c. Rule 324A.b., which provided that no operator, in the conduct of any oil or gas operation, shall perform any act or practice which shall constitute a violation of water quality standards or classifications established by Colorado Department of Public Health and Environment, Water Quality Control Commission ("CDPHE-WQCC") for waters of the state;

d. Rule 902.a., which required that a pit used for E&P waste shall be constructed and operated to protect waters of the state from significant adverse environmental impacts from E&P waste;

e. Rule 906.b.(3), which provided that spills/releases of any size which impact or threaten to impact any waters of the state shall be verbally reported to the COGCC Director as soon as practicable after discovery;

f. Rule 907.a.(1), which provided that operators shall ensure that E&P waste is properly stored, handled, transported, treated, recycled, or disposed to prevent threatened or actual significant adverse environmental impacts to air, water, soil or biological resources or to the extent necessary to ensure compliance with allowable concentration levels in Table 910-1, with consideration of WQCC ground water standards and classifications; and

g. Rule 907.a.(2), which required that E&P waste management activities shall be conducted, and facilities constructed and operated, to protect the waters of the state from significant adverse environmental impacts from E&P waste.

The NOAV required OXY to provide written descriptions of: (1) all pits constructed on the Well pad, including as-built dimensions and specification for any liners placed in the pit(s); (2) all fluids (water, drilling fluids, completion and frac fluids, flowback, and produced water) managed at the well pad; (3) any observations of condensate on any pits during flowback or completion; (4) all tanks used to manage fluids; (5) any spills or releases. In addition OXY was required to submit a Form 27, *Site Investigation & Remediation Work Plan,* for COGCC review.

13. On August 14, 2008, OXY acknowledged receipt of the NOAV, informed the COGCC that they had hired a third party contractor to advise them on the development of the required workplan and investigation, had prepared two maps identifying the areas they proposed to investigate, and had conducted a preliminary walking survey and collected surface water samples from several locations along McKay Gulch, southeast of the Well pad. This information was used by OXY to develop their Form 27 Site Investigation Remediation Work Plan.

14. On August 22, 2008, OXY asked for, and the COGCC Staff approved, an extension of the abatement date from August 25, 2008 to September 10, 2008. In addition OXY continued to provide COGCC with regular updates on their work until September 10, 2008 when they submitted their NOAV response.

15. On September 10, 2008, OXY submitted their response to the NOAV, which included:

a. A Form 27 Site Investigation and Remediation Workplan which described OXY's proposed installation of four monitoring wells (MW-1, MW-2, MW-3, and MW-4) surrounding the Well pad and the collection of samples from these wells for field and laboratory analysis. The boring logs for these monitoring wells are included in Attachments 10, 11, 12, and 13, respectively.

b. Information regarding pits on the Well pad: OXY provided a schematic drawing of the Well pad showing the Well, a 400 bbl condensate tank, a separator, one 205 foot by 48 foot reserve pit, and one 280 foot by 103 foot pit labeled "Pond 1".

c. Information regarding the fluids managed in the pits on the Well pad: OXY reported that the Well was drilled in 2005 using water based mud and completed in June 2005. The unlined reserve pit was used during drilling and completion. OXY reported that they did not have documentation regarding flowback or completion of the Well, that they did not have records concerning whether condensate was observed on the pit during completion activities, and that the employees responsible for completion and flowback operations were no longer employed by OXY.

d. Information regarding the fluids managed in the pit after drilling and completion: OXY reported that they used the unlined reserve pit as a production pit to manage produced water from approximately August 22, 2005 through July 30, 2008. In addition, the well was worked over during October 2007. OXY did not provide any specific information about the volumes of water, drilling fluids, completion and frac fluids, flowback, or produced water managed at the Well pad.

e. Information about Pond 1. OXY constructed Pond 1 in 2006 as a lined fresh water storage pit. The date was actually reported as 2005 in the September 10, 2008 submittal, but was corrected to 2006 in a later submittal. OXY also submitted a Form 15 Pit Permit for the purpose of converting Pond 1 into a lined production pit as of July 27, 2007. COGCC Staff approved that Form 15.

f. Information about all tanks used to manage fluids. OXY reported that one 400 bbl condensate tank had been used since the Well was installed.

g. Information about spills or releases. OXY reported that on June 2, 2008, a small spill had occurred after a truck had "pulled water", the hose was left in the pond and "residual water" drained out onto the location. OXY staff discovered the spill at approximately 10:00 AM. OXY determined that the volume of the spill was less than the COGCC reporting requirement.

The Volume and Disposition of the Produced Water and Other E&P Waste Placed in the Unlined Production Pit

16. As noted, OXY's NOAV response indicates that the unlined production pit on the Well pad was approximately 205 feet long and 48 feet wide. Subsequent observations, made by OXY from trenches excavated parallel and perpendicular to the long axis of the pit as part of their investigation of this matter (OXY's subsequent NOAV response dated March 5, 2010), indicate that the pit was approximately 10 feet deep. Using this information, COGCC staff has estimated that the pit's total working capacity was approximately 14,000 bbls (assuming two feet of freeboard). According to the production reports submitted by OXY (refer to Attachment 4), approximately 20,556 bbls of produced water from the Well were placed in the unlined production pit on the Well pad from August 22, 2005 through March 2008 when OXY stopped reporting water production for the Well. This volume of produced water exceeded the capacity of the pit by almost 50 percent.

17. Even though OXY has not provided documentation proving that it removed all of the produced water and other E&P waste from the unlined pit, COGCC Staff acknowledges that part of the fluids may have been removed by OXY or evaporated; however, based on the facts presented in Findings No. 27 through 30 and 33 below, Staff concludes that some portion of the fluids percolated into the underlying weathered sandstone (the D Unit of the Uinta Formation). These fluids would have infiltrated and flowed downgradient through this naturally porous and permeable sandstone and through natural fractures (refer to Attachments 10, 11, 12, and 13 that contain boring logs for four monitoring wells, MW-1, MW-2, MW-3, and MW-4, respectively, that were installed on the Well pad).

18. OXY's NOAV response included a "Pad 697-15-54 Pit Fluid Accounting Sheet" (refer to Attachment 6), which accounted for 400 bbls of fluid that were placed in the unlined production pit during the fall of 2007 and for 400 bbls of fluid that were removed from the unlined production pit and transferred into Pond 1 during July 2008. OXY's response did not account for the other 20,156 bbls of produced water that it had previously identified in its production reports (refer to Attachment 4).

19. Subsequently, on October 4, 2010, OXY submitted five haul tickets to the COGCC. The haul tickets for July 12, 2005, December 28, 2005, January 11, 2006, and October 9, 2006 are presented in Attachments 14, 15, 16, and 17, respectively. One haul ticket for August 28, 2006 through October 7, 2006 is presented in Attachment 8. OXY verbally asserted that these haul tickets all pertain to produced water removed from the 15-54 Well pad during 2005 and 2006. OXY's asserts that after October 2006 haul tickets and accounting records tracked the volume of water unloaded at a particular location and did not specify its origin; thus, subsequent haul tickets could not be used to indicate the volumes of water hauled from the 15-54 Well pad and were not provided to COGCC.

20. By their terms, however, the four haul tickets for July 12, 2005, December 28, 2005, January 11, 2006 and August 28, 2006 through October 7, 2006 do not involve the removal of produced water from the unlined pit on the Well pad. Rather the haul ticket for July 12, 2005 (Attachment 14) refers to "reserve pit 705-22-43," which is on a different well pad located in Section 5, T7S R97W. The haul ticket for December 28, 2005 (Attachment 15) refers to the "#1 Production H2O Tank @ So. Compressor Station", which is a different facility located elsewhere. The haul ticket for January 11, 2006 (Attachment 16) refers to "the 797-05-52 Pit @ Cascade Cr.", which is a different pit located in Section 5, T7S R97W. And the haul ticket for the period of time from August 28, 2006 through October 7, 2006 (Attachment 8) refers to the removal of completion and flowback fluids, not produced water, from a number of locations including the unlined pit at the Well pad. Only the haul ticket for October 9, 2006 (Attachment 17) refers to the removal of produced water from the Well pad, and it accounts for only 320 bbls of such water. Thus, by their terms, the haul tickets produced by OXY do not account for most of the 20,560 bbls of produced water that OXY previously reported.

21. Even if OXY is correct that these haul tickets did reflect the removal of produced water from the unlined pit on the Well pad, they and the "Pad 697-15-54 Pit Fluid Accounting Sheet" (Attachment 7) would account for only approximately 12,160 bbls of such water, which is only about 59% of the volume of produced water reported by OXY and would not account for any of the completion or flowback fluids placed in the unlined pit. Moreover, as discussed in Findings No. 27 through 30 and 33 below, soil and ground water samples collected by OXY indicate that fluids percolated from the pit into the bedrock beneath the pit and into nearby ground water. Therefore, the COGCC Staff concludes that OXY did not remove all of the produced water from the unlined pit.

22. If the haul tickets reflect the removal of produced water from the unlined pit, they indicate that the pit at times also contained liquid hydrocarbons. The July 12, 2005 haul ticket (Attachment 14) states that the pit being serviced contained "oily film." The December 28, 2005 haul ticket (Attachment 15) similarly notes that special action was taken to avoid loading "condensate".

The Impact of the Produced Water from the Unlined Production Pit on Ground Water and Soils

23. On November 4, 2008, OXY submitted a report entitled, *Release Characterization Report, OXY Cascade Canyon #697-15-54*, which included:

a. Additional information regarding the closure of the unlined production pit that had occurred in July 2008, which was less than one month before the COGCC Staff issued NOAV #200193504 to OXY (refer to Finding No. 12). This information included the analytical results for a soil sample collected from the backfill material at a depth of 2 to 3 feet below grade. COGCC staff contends that because this is a sample of backfill material it cannot be used to determine whether the fluids placed in the pit percolated into and impacted soil and bedrock below the bottom of the pit.

b. The results of hydrostatic testing of Pond 1. OXY contended that the results of this test indicate that Pond 1, which was lined, did not leak.

c. The analytical results for a produced water sample collected from Pond 1 on August 13, 2008. The results are summarized below:

Pond 1 (August 13, 2008)

Contaminant of Concern	Concentration	Table 910-1 Concentration
Benzene	3,200 µg/L	5 µg/L[1]
Toluene	5,400 µg/L	1,000 µg/L[1]
Ethylbenzene	130 µg/L	680 µg/L[1]
Xylenes (total)	2,600 µg/L	10,000 µg/L[1]
Chloride	5,700 mg/L	1.25 X Background[1]
Sodium	3,400 mg/L	500 mg/L[1]
TDS	10,000 mg/L	1.25 X Background[1]

1 - Table 910-1 standards as they existed in June 2008

d. The analytical results for soil samples collected from the four monitoring wells (MW-1, MW-2, MW-3, and MW-4) installed around the perimeter of the Well pad. The wells ranged from 19 feet to 28 feet deep, which was not sufficient to encounter groundwater. Boring logs for the monitoring wells indicate that the bedrock is not uniformly moist or saturated, but that the layers that are weathered and contain fractures, bedding plane parting, or thin coals with cleats contain the most moisture (refer to boring logs from monitoring wells MW-1, MW-2, MW-3, and MW-4, provided in Attachments 9, 10, 11, and 12).

24. As noted above, OXY's November 4, 2008 report stated that the unlined production pit had been closed and reclaimed in July 2008. Former Rule 905.a. required that "Unlined production and special purpose pits…shall be closed in accordance with an approved Site Investigation and Remediation Workplan, Form 27. The workplan shall be submitted for prior Director approval and shall include a description of the proposed investigation and remediation activities…." COGCC Staff contends that OXY closed and reclaimed the unlined production pit (that upon occasion had been used as an unlined special purpose pit (refer to Attachment 8)) on the Well pad without submitting or receiving approval for a Form 27 and that this work was completed less than one month before the COGCC Staff issued NOAV #200193504 to OXY (refer to Finding No. 12).

25. On October 30, 2009, OXY submitted a final version of the Investigation Plan and Flourometric Study, which was approved by COGCC Staff on November 4, 2009. The plan included:

a. The installation, development, and sampling of three monitoring wells, MW-40, MW-41, and MW-42, down gradient of the Well pad, along McKay Gulch, and the presumed flow path of what OXY calls the "alluvial aquifer" (refer to Attachment 18). The aerial photograph in Attachment 18 shows the location of the unlined pit on the Well pad relative to the proposed monitoring well locations, the valley floor, and the presumed alluvial aquifer.

b. The excavation of trenches across the reclaimed and unlined production pit on the Well pad to investigate the backfill material and native material beneath the bottom of the pit.

26. On January 5, 2010, the Director sent OXY a demand letter requiring them to submit the analytical results for ground water samples collected from the three new monitoring wells, identified by OXY as MW-40, MW-41, and MW-42, and soil samples collected from the trenches to the COGCC. This demand was made in accordance with COGCC Rule 207 to determine the presence of pollution.

27. On January 7, 2010, in response to the demand letter, OXY submitted an update of its investigation of the Well pad. Included in that update were the laboratory results for ground water samples collected from the monitoring wells identified by OXY as MW-40, MW-41, and MW-42 (refer to Attachment 18). In the sample collected from MW-40 on November 9, 2009, benzene was not detected, chloride was detected at a concentration of 820 mg/L, sodium was detected at a concentration of 280 mg/L, TDS was detected at a concentration of 2,000 mg/L and specific conductance was measured at 3,100 µmhos/cm. When compared to the results from an un-impacted spring in the area (COGCC Facility #705395), the concentration of sodium detected in the ground water from MW-40 was almost seven times greater, the concentration of chloride was more than nine times greater, the concentration of total dissolved solids ("TDS") was more than

four times greater, and specific conductance was more than four times greater. The Table 910-1 standards for chloride and TDS are 1.25 X background. If the results from the unimpacted spring (COGCC Facility # 705894) are used as background, then the ground water collected from MW-40 exceeded the Table 910-1 standards for chloride by a factor of nine and for TDS by a factor of four. In addition, the concentration of chloride in the ground water from MW-40 exceeded the CDPHE–WQCC standards of 250 mg/L by a factor of three, while the concentration of TDS in the ground water from MW-40 exceeded the CDPHE-WQCC standard of 400 mg/L or 1.25 X background by a factor of four. These comparisons are presented below:

MW-40 (COGCC Facility #705894, Sampled on November 9, 2009)

Contaminant of Concern	Concentration	Table 910-1 Concentration	CDPHE-WQCC Standards
Benzene	<5 µg/L	5 µg/L[1]	5 µg/L
Chloride	820 mg/L	1.25 X background	250 mg/L
Sodium	280 mg/L	N/A	Narrative
TDS	2,000 mg/L	1.25 X background	400 mg/L or 1.25 X background
Specific Conductance	3,100 µmhos/cm	N/A	N/A

1 - Table 910-1 standards as they existed in June 2008.

Spring - COGCC Facility #705395,
Average Concentrations for Samples Collected
by COGCC on 10/29/09

Contaminant of Concern	Concentration	Table 910-1 Concentration	CDPHE-WQCC Standards
Benzene	<5 µg/L	5 µg/L[1]	5 µg/L
Chloride	87.8 mg/L	1.25 X background	250 mg/L
Sodium	42 mg/L	N/A	Narrative
TDS	494 mg/L	1.25 X background	400 mg/L or 1.25 X background
Specific Conductance	754 µmhos/cm	N/A	N/A

1 - Table 910-1 standards as they existed in June 2008.

28. COGCC Staff asserts that these results are significant because they demonstrate that the concentration of chloride and TDS in the ground water from MW-40 exceeded both the Table 910-1 concentrations and the CDPHE–WQCC standards. Further, the elevated concentration of sodium in the ground water sample collected from MW-40 indicates the CDPHE-WQCC Interim Narrative Standard was violated because the concentration exceeded the ambient concentration in the ground water that occurs naturally in this area. This means that the ground water was impacted by human activities, namely by the release of produced water from an unlined pit, as indicated by the elevated sodium, chloride, and TDS concentrations and the specific conductance. Further, COGCC Staff contends that MW-40 is up gradient of all other possible sources of contamination, except for the oil and gas operations on the Well pad. Therefore, the impacts detected are attributable to OXY's operations on the Well pad.

29. On January 7, 2010, OXY also submitted the analytical results for soil samples collected from a trench (identified by OXY as the West Trench) excavated through the backfill and into the bedrock below the unlined production pit (refer to the aerial photograph in Attachment 19). Those results (refer to Attachment 20 and the summary table below) show the presence of elevated sodium adsorption ratio ("SAR"), electrical conductivity ("EC"), and TPH and BTEX compounds in bedrock beneath the unlined production pit compared to the concentrations detected in background samples or to the Table 910-1 concentrations that were in effect at the time. This is significant as it demonstrates that produced water and hydrocarbon compounds were percolating into the naturally fractured bedrock below the unlined production pit on the Well pad.

West Trench Backfill and Bedrock Characterization (Sampled in November 2008)

Contaminant of Concern	Range of Concentrations Trench Samples Bedrock	Range of Concentrations Background Samples	Table 910-1 Concentration
Benzene	ND – 0.86 mg/kg	Not Tested	0.17 mg/kg
TPH GRO	0.78 – 1,600 mg/kg	Not Tested	1,000 mg/kg
TPH DRO	25 – 1,500 mg/kg	Not Tested	1,000 mg/kg
Electrical Conductivity	2.2 – 7.9 µmhos/cm	0.34 – 0.76 µmhos/cm	< 4 µmhos/cm or 2 X background
Sodium Adsorption Ratio (SAR)	10 – 71.1	0.9 – 1.4	<12

1 - Table 910-1 standards as they existed in June 2008.

30. On March 5, 2010, OXY submitted a Soil and Groundwater Characterization Report for the Well pad. That report presented descriptions of the activities performed by OXY to characterize soil and ground water as well as conclusions drawn from that work. That report concluded that:

a. Elevated SAR and EC are present in soil and bedrock in the vicinity of the unlined production pit on the Well pad.

b. Ground water results indicate that alluvial and/or shallow bedrock ground water in the vicinity of MW-40 has been impacted by water with high dissolved solids. No petroleum hydrocarbons were detected in that water.

c. A tracer study did not identify a hydraulic connection between the Well pad and shallow ground water or springs in the area under the hydrologic conditions that existed at that time.

31. On March 12, 2010, COGCC Staff informed OXY that in light of the discovery of elevated SAR, EC, and hydrocarbon compounds in bedrock beneath the reclaimed and unlined production pit on the Well pad, OXY would be required, in accordance with Rule 905.c. to submit Spill/Release Reports (COGCC Form 19).

32. On March 24, 2010, OXY responded to the spill/release reporting requirement by informing COGCC Staff that it disagreed with the COGCC Staff's interpretation of the data submitted on January 7, 2010 and on March 5, 2010 and its relevance with respect to the requirement in Rule 905.c. that operators must submit a Spill/Release Report, Form 19 for spills and releases discovered during closure operations. To date, OXY has not submitted a Spill/Release Report, Form 19, for this release.

33. On May 12 and May 13, 2010, the COGCC's third party contractor collected water samples and measured field parameters and water levels from monitoring wells located in the area. The results of the sampling at MW-40 indicated that concentrations of chloride and TDS had decreased, but still exceeded the Table 910-1 standards and that the concentration of sodium had decreased, but still exceeded the CDPHE-WQCC Interim Narrative Standards. This provided evidence of continuing impacts from previous operations on the Well pad. These results are summarized below:

MW-40 (COGCC Facility #705894, Sampled on May 12, 2010)

Contaminant of Concern	Concentration	Table 910-1 Concentration	CDPHE-WQCC Standards
Benzene	<5 µg/L	5 µg/L[1]	5 µg/L
Chloride	440 mg/L	1.25 X background	250 mg/L
Sodium	200 mg/L	N/A	Narrative
TDS	1,100 mg/L	1.25 X background	400 mg/L or 1.25 X background
Specific Conductance	1,860 µmhos/cm	N/A	N/A

1 - Table 910-1 standards as they existed in June 2008.

Other Recent Enforcement Proceedings Involving OXY Pits

34. In Order No. 1V-346, the Commission approved an Administrative Order by Consent ("AOC") for OXY's operation of an unpermitted production pit at the Cascade Creek #605-

a Well pad during the period from November 30, 2007 until June 17, 2008. The AOC assessed total base fines of Three Hundred Thirty Thousand dollars ($330,000), with a total adjusted penalty of Two Hundred Fifty Seven Thousand, Four Hundred dollars ($257,400), for violations of Rules 324A.a., 324A.b., 902.a., 903.a., and 907a.(2).

35. In Order No. 1V-347, the Commission approved an AOC for OXY's operation of an unpermitted and unlined production pit at the OXY #697-9-61 Well pad during the period from January 2008 until May 2008. The AOC assessed total base fines of Five Hundred Thousand dollars ($500,000), with a total adjusted penalty of Three Hundred Ninety Thousand dollars ($390,000), for violations of Rules 324A.a., 324A.b., 902.a., 903.a., and 907a.(2).

36. Thus, the present matter marks the third recent enforcement proceeding against OXY for its operation of a production pit. In each case, OXY failed to submit a sensitive area determination or a permit; in two cases, OXY failed to line the pit. All of these cases involve pits operated in the same area on the Roan Plateau during some portion of the period from 2005 through 2008. However, COGCC Staff believes that OXY subsequently improved its water management practices and environmental performance as described in Finding No. 51 below.

Calculation and Assessment of Fine

37. COGCC Staff contends that OXY began using the unlined reserve pit on the Well pad as a production pit beginning August 22, 2005, and continued to use the pit for this purpose until approximately July 30, 2008, when OXY closed and reclaimed the pit (a period of 1,073 days). Pursuant to Rule 523.a.(1) the Commission has the discretion to find that each day a violation exists constitutes a separate violation. This is part of a pattern of violations in which OXY repeatedly failed to submit a sensitive area determination, obtain a permit, and, in two cases, line productions pits constructed in hydrologically vulnerable locations in the same general area and during the same general period. On the other hand, treating each day as a separate violation would result in a multi-million dollar penalty for violations that do not involve documented human exposure to hydrocarbons or the documented presence of hydrocarbons in ground or surface water. After considering all of the circumstances of this case, the COGCC Staff requests that a violation period of 80 days be used for calculating the penalty.

38. Rule 523. specifies a base fine of One Thousand dollars ($1,000) for each day of violation of Rules 324A.a., 324A.b., 902.a., 903.a.(1)B., 905.a., 906.b.(3), and 907a.(2). Rule 523.a.(3) specifies that "the maximum penalty for any single violation shall not exceed Ten Thousand dollars ($10,000) regardless of the number of days of such violation," unless the violation results in significant waste of oil and gas resources, damage to correlative rights, or a significant adverse impact on public health, safety or welfare or the environment.

39. Based on the above facts, COGCC Staff contends that the release or releases of fluids from the unlined pit resulted in a significant adverse impact to the environment. The Well pad is and the unlined pit was located in the recharge area for ground water and surface water and underlain by bedrock that is weathered and contains fractures, bedding plane partings, and thin coal seams with cleats. These features increase the permeability of the bedrock and have a high potential to act as conduits for fluids placed in unlined pits to migrate into shallow ground water. OXY used an unlined pit for drilling, completion, and workover operations, the containment of flowback fluids, and for managing produced water. The use of an unlined pit to manage these types of fluids created a very high potential risk for impacting ground water. Analytical data from ground water samples collected from monitoring well MW-40, which is located approximately 1,200 feet southeast of the former location of the unlined pit, indicate that ground water was impacted by oil and gas operations on the Well pad and that the concentrations of chloride and TDS exceeded both the Table 910-1 standards and the CDPHE-WQCC ground water standards, and that the concentration of sodium exceeded the CDPHE-WQCC Interim Narrative Standard. These exceedances continued through at least May 2010, some two years after the pit was closed. Similar data from soil samples taken from bedrock beneath the unlined production pit indicate that produced water and hydrocarbon compounds percolated into the naturally fractured bedrock beneath the pit.

40. The standards for ground water were set by the CDPHE–WQCC because they are necessary to protect public health and welfare, beneficial uses of water, and the environment and they are intended to protect ground water quality from uncontrolled degradation. The analytical data for the sample collected from the unimpacted spring (COGCC Facility #705894) demonstrates that the natural ground water in this area is very high quality; with a TDS

concentration of 494 mg/L, it is better than the standard and is suitable for any current or future beneficial use. The high quality of this water increases the significance of the documented water quality impacts. Further, these impacts could have been easily prevented if OXY had simply lined their pit, thereby using a "cost-effective and technically feasible" measure to "prevent the unauthorized discharge" of produced water and other E&P waste as required by Rule 324A.a.

41. OXY did not violate Rule 209.

42. OXY violated **Rule 324A.a.** because it placed produced water and associated condensate in the unlined production pit on the Well pad, which failed to contain the fluids which percolated into the underlying bedrock and impacted groundwater, and by so doing, OXY failed to take precautions to prevent significant adverse environmental impacts to air, water, soil, or biological resources to the extent necessary to protect public health, safety and welfare and to prevent the unauthorized discharge of oil, gas or E&P waste. A base fine of Eighty Thousand dollars (**$80,000**) has been calculated for the violation of Rule 324A.a.

43. OXY violated **Rule 324A.b.** because it placed produced water and associated condensate in the unlined production pit on the Well pad, which failed to contain the fluids which percolated into the underlying bedrock and impacted groundwater, and by so doing, OXY performed an oil and gas related act or practice which constituted a violation of the water quality standards or classifications established by CDPHE-WQCC for waters of the state. A base fine of Eighty Thousand dollars (**$80,000**) has been calculated for the violation of Rule 324A.b.

44. OXY violated **Rule 902.a.** because it placed produced water and other fluids in a unlined production pit on the Well pad, which failed to contain the fluids which percolated into the underlying bedrock and impacted groundwater, and by so doing, OXY failed to construct and operate an E&P pit to protect waters of the state from significant adverse impacts from E&P waste. A base fine of Eighty Thousand dollars (**$80,000**) has been calculated for the violation of Rule 902.a.

45. OXY violated **Rule 903.a.(1)B.** because it operated an unlined pit in a sensitive area and used the pit as a production pit and as a special purpose pit from August 22, 2005 through July 30, 2008, but did not permit the pit with the COGCC as required by the rules in effect at the time. A base fine of Eighty Thousand dollars (**$80,000**) has been calculated for the violation of Rule 903.a.

46. OXY violated **Rule 905.a.** because it closed and reclaimed the unlined pit, which had been used as a production pit and as a special purpose pit, without submitting or receiving approval for a Form 27 as required by the rules in effect at the time. A base fine of Ten Thousand dollars (**$10,000**) has been calculated for the violation of Rule 907.a.(2).

47. OXY violated **Rule 906.b.(3).** because it failed to report a spill/release that impacted waters of the state. A base fine of Ten Thousand dollars (**$10,000**) has been calculated for the violation of Rule 906.b.(3).

48. OXY violated **Rule 907.a.(2)** because it placed produced water and associated condensate in a unlined production pit on the Well Pad, which failed to contain the fluids which percolated into the underlying bedrock and impacted groundwater, and by so doing, OXY failed to conduct and operate E&P waste management activities in a manner which ensured the protection of the waters of the state from significant adverse environmental impacts from E&P waste. A base fine of Eighty Thousand dollars (**$80,000**) has been calculated for the violation of Rule 907.a.(2).

49. In summary, OXY should be found in violation of Rules 324A.a., 324A.b., 902.a., 903.a., 905.a., 906.b.(3), and 907a.(2) as described herein, for failing to properly permit, construct, maintain, and repair the pit on the Well pad so that E&P waste was not released, and base fines levied as compiled in the table below:

Rule Violation	*Days of Violation*	*Fine Amount/Violation*
324A.a.	80	$80,000
324A.b.	80	$80,000
902.a.	80	$80,000
903.a.(1)B.	80	$80,000
905.a.	-	$10,000
906.b.(3)	-	$10,000
907.a.(2)	80	$80,000
Total Base Fine		***$420,000***

50. Pursuant to Rule 523.d., the fine may be increased if aggravating factors are present. COGCC Staff recommends that the fine not be increased for this reason.

51. Pursuant to Rule 523.d., the fine may be decreased if mitigating factors are present. COGCC Staff recommends that the fine be reduced by twelve percent (12%) because OXY has spent $8,000,000 to decrease the risk of future ground or surface water impacts from its operations in this area by reducing the number of the pits it uses to manage fluids in the area from approximately 23 to one fresh water pond and ten treated produced water ponds and is now utilizing onsite produced water storage tanks with automatic well shut-in technology should the storage tanks reach capacity.

52. For those rule violations set forth in Finding No. 49, OXY should be ordered to pay a total adjusted fine of Three Hundred Sixty Nine Thousand, Six Hundred dollars ($369,600), which takes into consideration a 12% fine reduction for mitigating factors.

53. Payment of the fine pursuant to this Order Finding Violation does not relieve the operator from its obligations to complete abatement or corrective actions set forth in the NOAV, as may be amended or modified by Staff.

54. OXY, or its successors or assigns, should be required to remain responsible for complying with this Order Finding Violation, notwithstanding any subsequent sale of property.

ORDER

NOW, THEREFORE, IT IS ORDERED, that OXY USA WTP LP shall be found in violation of the Rules set forth in Finding No. 49, above, for oil and gas operations at the Cascade Creek #697-15-54 Well, located in the SW¼ SE¼ of Section 15, Township 6 South, Range 97 West, 6th P.M., for those acts alleged in this Order Finding Violation.

IT IS FURTHER ORDERED, that OXY USA WTP LP shall be assessed a total adjusted fine of Three Hundred Sixty Nine Thousand, Six Hundred dollars ($369,600) for the Rule violations set forth in Finding No. 52, above, which shall be payable within thirty (30) days of the date the order is approved by the Commission.

IT IS FURTHER ORDERED, that OXY USA WTP LP shall complete the abatement or corrective actions required by the Notice of Alleged Violation described in Finding No. 7, above, or any amendments or modifications thereto specified by Staff. In addition by March 31, 2011, the operator must submit for COGCC approval an addendum to the existing Form 27, *Site Investigation and Remediation Workplan* that includes a schedule for the submittal of quarterly written progress reports of ongoing remediation and monitoring of the impacts to the Well pad area, the first of which shall be submitted on June 15, 2011.

IT IS FURTHER ORDERED, that under the State Administrative Procedure Act the Commission considers this order to be final agency action for purposes of judicial review within thirty (30) days after the date this order is mailed by the Commission.

IT IS FURTHER ORDERED, that an application for reconsideration by the Commission of this order is not required prior to the filing for judicial review.

IT IS FURTHER ORDERED, that the provisions contained in the above order shall become effective forthwith.

IT IS FURTHER ORDERED, that the Commission expressly reserves its right after notice and hearing, to alter, amend, or repeal any and/or all of the above orders.

ENTERED this _____ day of_____, 2011.

OIL AND GAS CONSERVATION COMMISSION
OF THE STATE OF COLORADO

By_____
Robert A. Willis, Enforcement Officer

Dated at Suite 801
1120 Lincoln St.
Denver, Colorado 80203
January 27, 2011

ATTACHMENT 1

COMPILATION OF CERTAIN RULES AND REGULATIONS IN EFFECT AT THE TIME OF THIS MATTER

100 Series – Definitions

PRODUCTION PITS shall mean those pits used after drilling operations and initial completion of a well, including natural gas gathering, processing and storage facility pits, multi-well pits and:

> **PRODUCED WATER PITS** used to temporarily store produced water prior to injection for enhanced recovery or disposal, off-site transport, or surface-water discharge.

SENSITIVE AREA is an area vulnerable to potential significant adverse ground water impacts, due to factors such as the presence of shallow economically usable ground water or pathways for communication with deeper economically usable ground water; proximity to surface water, including lakes, rivers, perennial or intermittent streams, creeks, irrigation canals, and wetlands. The procedure for identifying Sensitive Areas is set forth in the Sensitive Area Decision Identification Tree and Guidance Document.

SPECIAL PURPOSE PITS shall mean those pits used in oil and gas operations, including natural gas gathering, processing and storage facility pits, multi-well pits, and:

> **WORKOVER PITS** used to contain liquids during the performance of remedial operations on a producing well in an effort to increase production.

900 Series – Exploration & Production (E&P) Waste Management

901.e. Sensitive area determination. Operators shall make a sensitive area determination using the Sensitive Area Determination Decision Tree, Figure 901-1 to evaluate the potential for impact to ground water and submit data evaluated and analysis used in the determination to the Director for the following operations or remediation activities:

* * *

(2) Construction of production and special purpose pits[.]

901.f. Sensitive area operations. Operations in sensitive areas shall incorporate adequate measures and controls to prevent significant adverse environment impacts and ensure compliance with the allowable concentrations and levels in Table 910-1, with consideration to WQCC standards and classifications. Unlined production and special purpose pits in sensitive areas are generally not approved.

903. PIT PERMITTING/REPORTING REQUIREMENTS

a. Drilling pits, production pits, and special purpose pits shall be permitted or reported as follows:

(1) Pit Construction Report/Permit, Form 15, shall be submitted for prior Director approval of the following:

* * *

B. Production pits and unlined special purpose pits in sensitive areas.

904. PIT LINING REQUIREMENTS AND SPECIFICATIONS

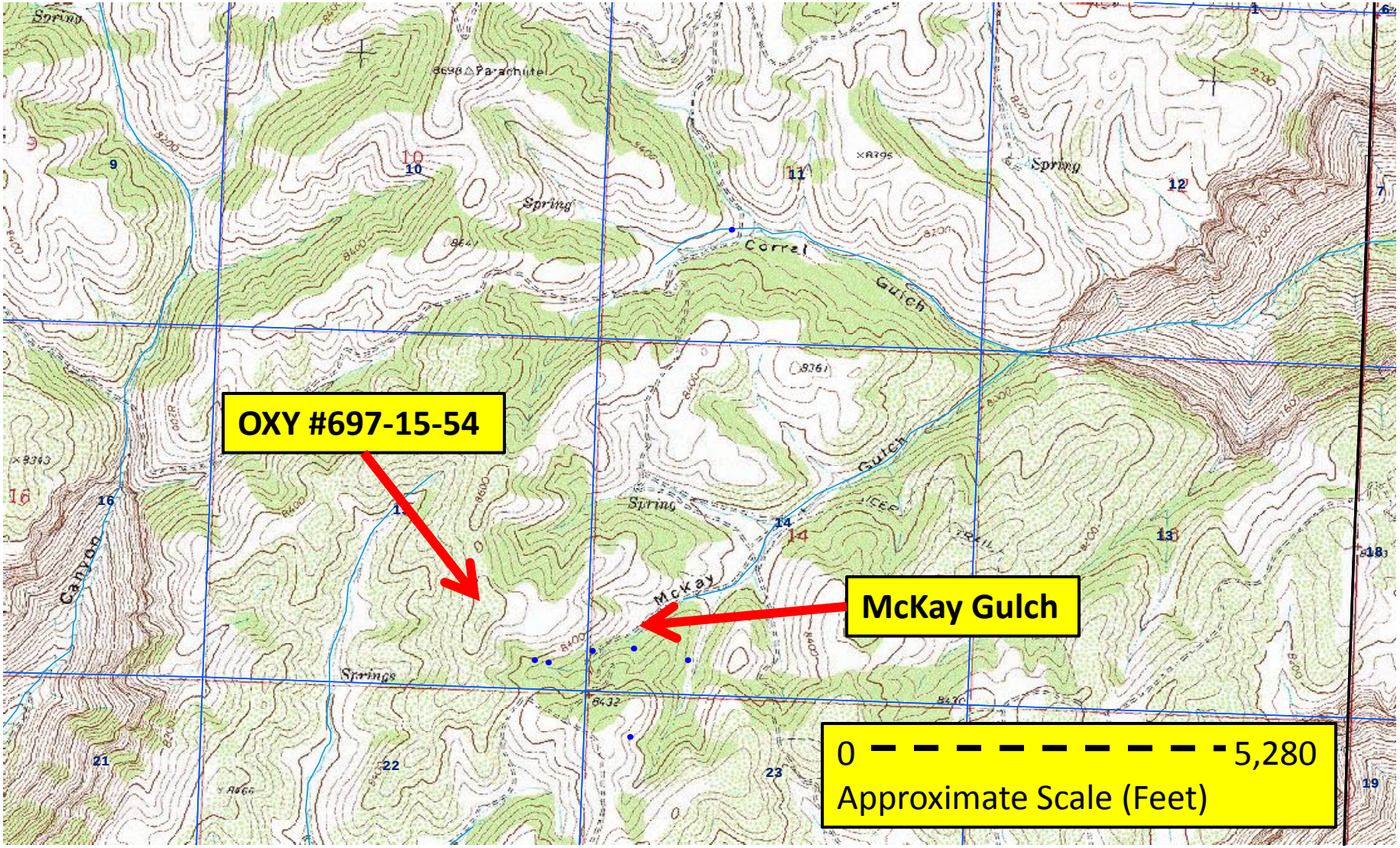
a. Pit lining requirements. The following pits shall be lined:

* * *

(2) Production pits in sensitive areas.

(3) Special purpose pits, except emergency pits constructed during initial response to spills/releases, or flare pits where there is no risk of condensate accumulation.

ATTACHMENT 2
OXY CASCADE CREEK #697-15-54
SW SE SECTION 15 T6S R97W



ATTACHMENT 3
2005 AERIAL PHOTOGRAPH
OXY #697-15-54 WELL PAD & PIT

COGIS - Monthly Well Production

ATTACHMENT 4
Page 1 of 3

PRODUCTION DATA REPORT -- GIS

API #:	05-045-10687	Location:	SWSE 15 6S 97W 6
Field:	GRAND VALLEY	Field Code:	31290
Facility Name:	CASCADE CREEK	Facility #:	697-15-54
Operator Name:	OXY USA WTP LP	Operator #:	66571

PRODUCTION YEAR: All

							OIL						Water Prod	Water(psig)	
							BOM	Produced	Sold	Adj.	EOM	Gravity		Tbg.	Csg.
Year	Month	Formation	Sidetrack	Well Status	Days Prod	Product	GAS						Water Disp. Code	Gas (psig)	
							Prod	Flared	Used	Shrinkage	Sold	BTU		Tbg.	Csg.
2005	Aug	WILLIAMS FORK	00	PR	11	Oil ->		34	33		1	64.2	662		
						Gas ->	8,628		640		7,988	1,078	P		
2005	Sep	WILLIAMS FORK	00	PR	30	Oil ->	1	36	31		6	65.1	1,882		
						Gas ->	32,912		1,488		31,424	1,078	P		
2005	Oct	WILLIAMS FORK	00	PR	31	Oil ->	6	43	44		5	62.5	659		
						Gas ->	32,864		1,169		31,695	1,079	P		
2005	Nov	WILLIAMS FORK	00	PR	30	Oil ->	5	30	32		3	65.4	2,107		
						Gas ->	30,692		939		29,753	1,079	P		
2005	Dec	WILLIAMS FORK	00	PR	31	Oil ->	3	44	36		11	63.4	1,653		
						Gas ->	31,093		1,004		30,089	1,080	P		
2006	Jan	WILLIAMS FORK	00	PR	31	Oil ->	11	20	20		11	65.5	1,211		
						Gas ->	24,601		1,211		23,390	1,083	P		
2006	Feb	WILLIAMS FORK	00	PR	28	Oil ->	11	40	35		16	59.8	966		
						Gas ->	25,282			2,499	22,783	1,102	P		
2006	Mar	WILLIAMS FORK	00	PR	31	Oil ->	16	41	53		4	57.2	1,003		
						Gas ->	26,234			1,626	24,608	1,084	P		
2006	Apr	WILLIAMS FORK	00	PR	30	Oil ->	4	22	18		8	56.0	973		
						Gas ->	24,651			1,038	23,613	1,067	P		
2006	May	WILLIAMS FORK	00	PR	31	Oil ->	8	52	51		9	55.4	746		
						Gas ->	23,730			1,737	21,993	1,067	P		
2006	Jun	WILLIAMS FORK	00	PR	30	Oil ->	9	28	14		23	56.0	746		
						Gas ->	22,061			964	21,097	1,071	P		
2006	Jul	WILLIAMS FORK	00	PR	31	Oil ->	23	11	20		14	54.8	494		
						Gas ->	21,426			1,322	20,104	1,070	P		
2006	Aug	WILLIAMS FORK	00	PR	31	Oil ->	14		12		2	56.1	447		
						Gas ->	20,797			1,563	19,234	1,063	P		
2006	Sep	WILLIAMS FORK	00	PR	30	Oil ->	2				2		405		
						Gas ->	19,206			1,579	17,627	1,067	P		
2006	Oct	WILLIAMS FORK	00	PR	31	Oil ->	2		2			56.8	428		
						Gas ->	21,572			1,441	20,131	1,067	P		
2006	Nov	WILLIAMS FORK	00	PR	30	Oil ->							376		
						Gas ->	17,841			1,527	16,314	1,069	P		
2006	Dec	WILLIAMS FORK	00	PR	31	Oil ->							359		
						Gas ->	18,818			793	18,025	1,069	P		

COGCC – Monthly Well Production
API 05-045-10687
Cascade Creek 697-15-54 Well

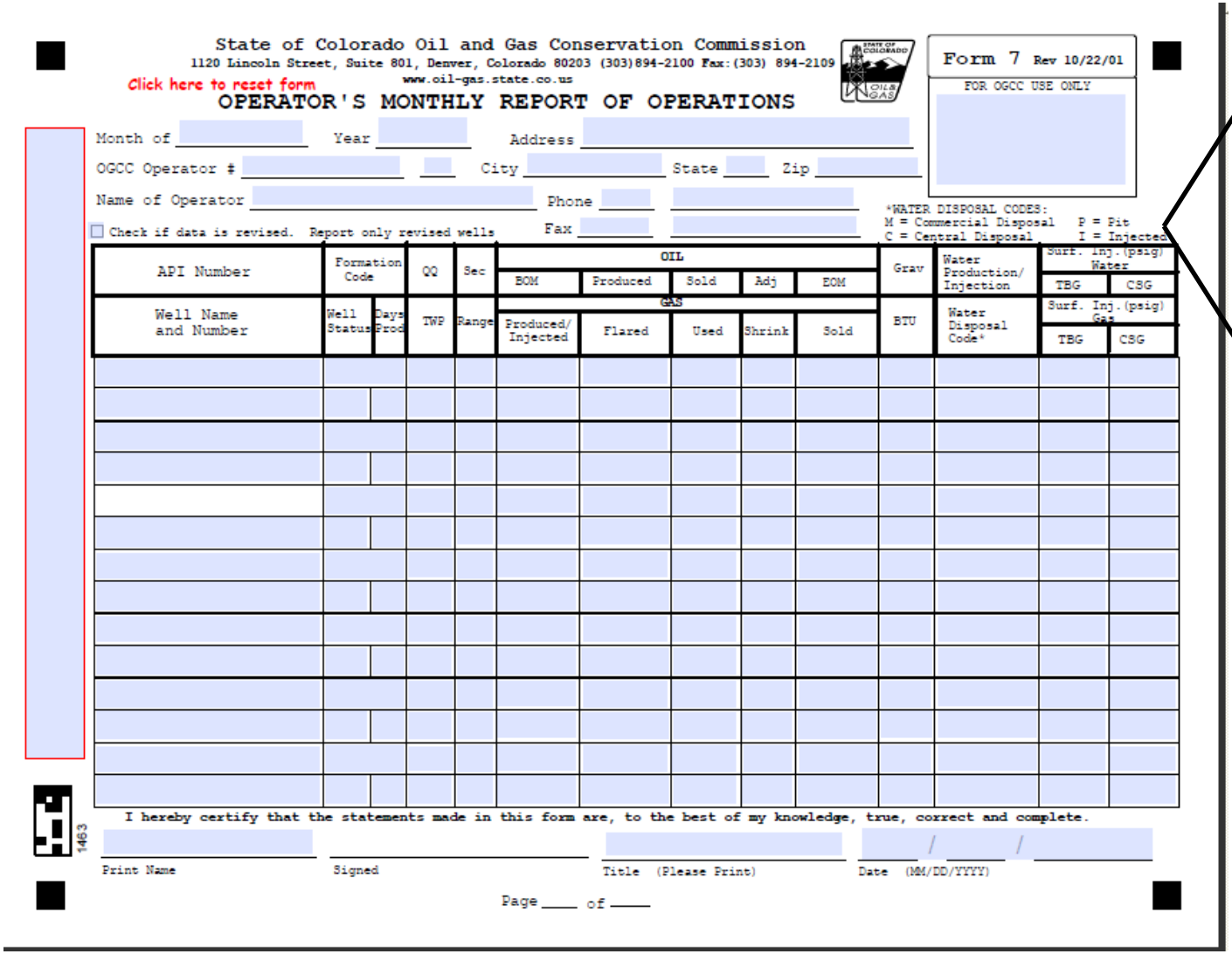
2007	Jan	WILLIAMS FORK	00	PR	31	Oil -> Gas ->	17,219			1,094	16,125	1,066	336 P		
2007	Feb	WILLIAMS FORK	00	PR	28	Oil -> Gas ->	16,094	2	2	1,102	14,992	57.6 1,065	336 P		
2007	Mar	WILLIAMS FORK	00	PR	31	Oil -> Gas ->	17,453	6	5	1,192	1 16,261	57.8 1,066	363 P		
2007	Apr	WILLIAMS FORK	00	PR	30	Oil -> 1 Gas -> 16,569		7	5	1,471	3 15,098	56.6 1,072	360 P		
2007	May	WILLIAMS FORK	00	PR	30	Oil -> 3 Gas -> 16,644		14	16	1,361	1 15,283	56.2 1,079	360 P		
2007	Jun	WILLIAMS FORK	00	PR	30	Oil -> 1 Gas -> 13,130		60	59	231	2 12,899	56.1 1,067	360 P		
2007	Jul	WILLIAMS FORK	00	PR	31	Oil -> 2 Gas -> 12,572		77	66	296	13 12,276	57.0 1,059	372 P		
2007	Aug	WILLIAMS FORK	00	PR	31	Oil -> 13 Gas -> 13,302		41	45	397	9 12,905	55.3 1,061	372 P		
2007	Sep	WILLIAMS FORK	00	PR	29	Oil -> 9 Gas -> 12,023		29	24	547	14 11,476	55.9 1,061	360 P		
2007	Oct	WILLIAMS FORK	00	PR	28	Oil -> 14 Gas -> 10,791		52	57	504	9 10,287	55.8 1,062	372 P		
2007	Nov	WILLIAMS FORK	00	PR	30	Oil -> 10 Gas -> 14,536		99	98	637	11 13,899	56.1 1,067	360 P		
2007	Dec	WILLIAMS FORK	00	PR	29	Oil -> 11 Gas -> 12,120		30	27	682	14 11,438	55.9 1,068	372 P		

COGCC – Monthly Well Production
API 05-045-10687
Cascade Creek 697-15-54 Well

ATTACHMENT 4
Page 3 of 3

2008	Jan	WILLIAMS FORK	00	PR	27	Oil ->	14	73	75		13	56.8	372		
						Gas ->	11,331				11,331	1,074	P		
2008	Feb	WILLIAMS FORK	00	PR	25	Oil ->	13	70	73		10	58.3	372		
						Gas ->	8,483			91	8,392	1,075	P		
2008	Mar	WILLIAMS FORK	00	PR	31	Oil ->	10	83	82		11	58.0	372		
						Gas ->	14,247			505	13,742	1,076	P		
2008	Apr	WILLIAMS FORK	00	PR	29	Oil ->	11	104	110		5	57.0			
						Gas ->	12,398			370	12,028	1,075			
2008	May	WILLIAMS FORK	00	PR	31	Oil ->	5	74	75		4	56.2			
						Gas ->	12,600			381	12,219	1,075			
2008	Jun	WILLIAMS FORK	00	PR	30	Oil ->	4	40	43		1	56.8			
						Gas ->	12,273			484	11,789	1,077			
2008	Jul	WILLIAMS FORK	00	PR	31	Oil ->	1		1			55.3	7		
						Gas ->	11,810			553	11,257	1,074	P		
2008	Aug	WILLIAMS FORK	00	PR	31	Oil ->							7		
						Gas ->	11,622			595	11,027	1,069	P		
2008	Sep	WILLIAMS FORK	00	PR	30	Oil ->							33		
						Gas ->	10,063			102	9,961	1,063	P		
2008	Oct	WILLIAMS FORK	00	PR	28	Oil ->		32	30		2	56.1	79		
						Gas ->	9,333				9,333	1,065	P		
2008	Nov	WILLIAMS FORK	00	PR	30	Oil ->	2		2			56.9			
						Gas ->	7,993			337	7,656	1,066			
2008	Dec	WILLIAMS FORK	00	PR	22	Oil ->									
						Gas ->	315			18	297	1,066			
2009	Jan	WILLIAMS FORK	00	PR	10	Oil ->		23	22		1	56.8	24		
						Gas ->	13,821			1,466	12,355	1,067	P		
2009	Feb	WILLIAMS FORK	00	PR	28	Oil ->	1		1			56.0			
						Gas ->	11,832			931	10,901	1,072			
2009	Mar	WILLIAMS FORK	00	PR	31	Oil ->									
						Gas ->	10,669		1,044	9,625					
2009	Apr	WILLIAMS FORK	00	PR	30	Oil ->									
						Gas ->	9,561			842	8,719	1,071			
2009	May	WILLIAMS FORK	00	PR	28	Oil ->		5	5			55.7	3		
						Gas ->	10,694			940	9,754	1,039	P		
2009	Jun	WILLIAMS FORK	00	PR	30	Oil ->									
						Gas ->	10,226			1,192	9,034	1,039			
2009	Jul	WILLIAMS FORK	00	PR	31	Oil ->									
						Gas ->	10,204			1,070	9,134	1,044			
2009	Aug	WILLIAMS FORK	00	PR	31	Oil ->									
						Gas ->	8,111			804	7,307	1,039			
2009	Sep	WILLIAMS FORK	00	PR	30	Oil ->									
						Gas ->	7,699			642	7,057	1,039			
2009	Nov	WILLIAMS FORK	00	PR	30	Oil ->									
						Gas ->	8,118			693	7,425	1,039			
2009	Dec	WILLIAMS FORK	00	PR	31	Oil ->									
						Gas ->	8,601			985	7,616	1,039			
2010	Jan	WILLIAMS FORK	00	PR	31	Oil ->									
						Gas ->	7,147			527	6,620	1,039			
2010	Feb	WILLIAMS FORK	00	PR	28	Oil ->									
						Gas ->	6,766			453	6,313	1,039			

ATTACHMENT 5
COGCC FORM 7 – MONTHLY PRODUCTION REPORT



State of Colorado Oil and Gas Conservation Commission
1120 Lincoln Street, Suite 801, Denver, Colorado 80203 (303)894-2100 Fax:(303) 894-2109
www.oil-gas.state.co.us

Click here to reset form

OPERATOR'S MONTHLY REPORT OF OPERATIONS

Form 7 Rev 10/22/01

FOR OGCC USE ONLY

Month of _____ Year _____ Address _____

OGCC Operator # _____ _____ City _____ State _____ Zip _____

Name of Operator _____ Phone _____ _____

Check if data is revised. Report only revised wells Fax _____ _____

*WATER DISPOSAL CODES:
M = Commercial Disposal P = Pit
C = Central Disposal I = Injected

API Number	Formation Code		QQ	Sec	OIL BOM	Produced	Sold	Adj	EOM	Grav	Water Production/ Injection	Surf. Inj.(psig) Water TBG	CSG
Well Name and Number	Well Status	Days Prod	TWP	Range	GAS Produced/ Injected	Flared	Used	Shrink	Sold	BTU	Water Disposal Code*	Surf. Inj.(psig) Gas TBG	CSG

I hereby certify that the statements made in this form are, to the best of my knowledge, true, correct and complete.

Print Name _____ Signed _____ Title (Please Print) _____ Date (MM/DD/YYYY) ___/___/___

Page ____ of ____

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WATER DISPOSAL CODES

M	Commercial Disposal facility
C	Central Disposal pit or well
P	Onsite Pit
I	Injected on lease
S	Surface Discharge

ATTACHMENT 6 - JUNE 2006
OXY CASCADE CREEK #697-15-54 WELL PAD, PRODUCTION PIT, & POND 1

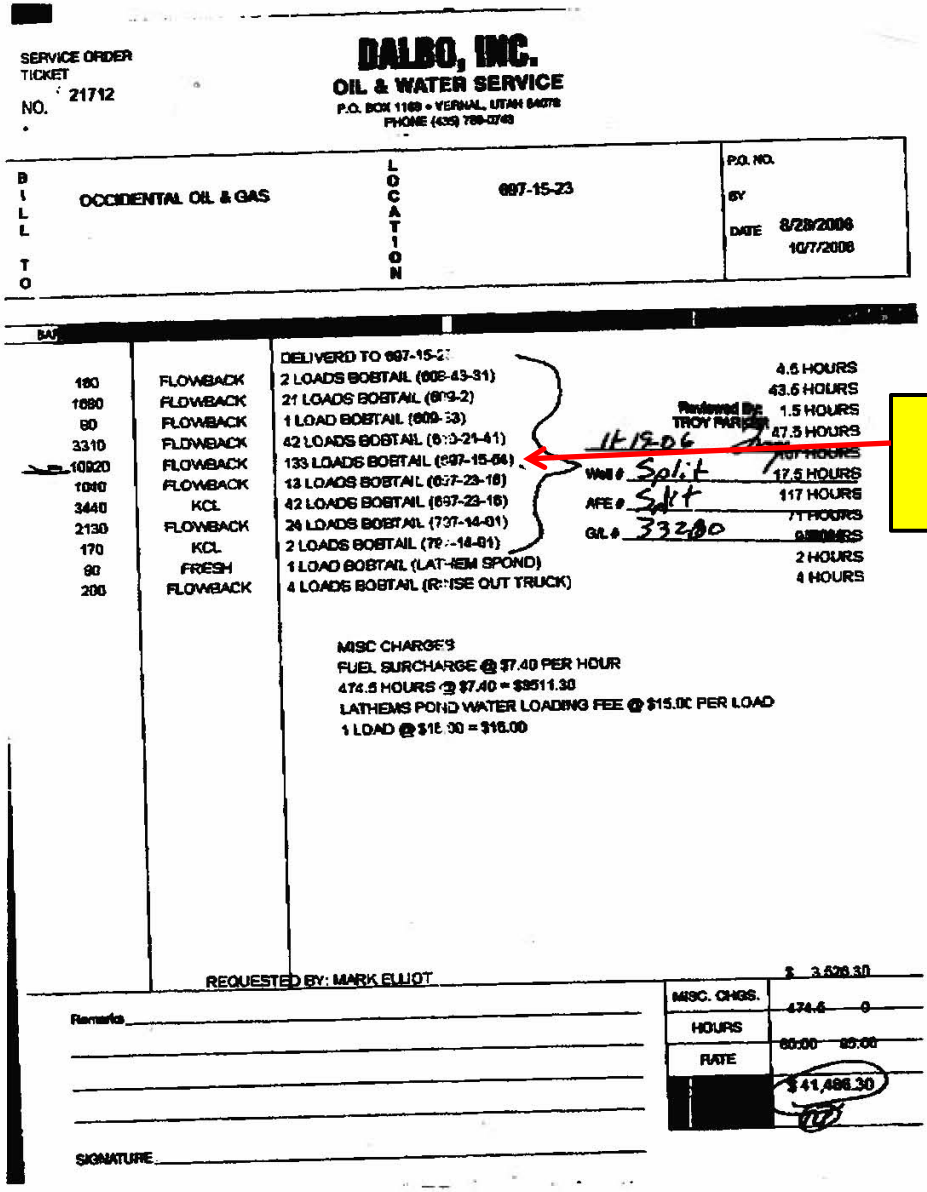
ATTACHMENT 7

PAD 697-15-54 PIT FLUID ACCOUNTING SHEET

Date	Job Name	To Site	Barrels	Notes	Authorized By
Water					
9/20/2007	CC 697-15-54 Pond 1 - Bobtail	Oxy - CC 697-15-54	160	from uprights - put into pit	Dougo
10/1/2007	CC 697-15-54 Pond 1 - Bobtail	Oxy - CC 697-15-54	160	from uprights - put into pit	Dougo
11/2/2007	CC 697-15-54 Pond 1 - Bobtail	Oxy - CC 697-15-54	80	pulled dehydrations - put in pit	Dougo
7/27/2008	CC 697-15-54 Pond 1 - Bobtail	Oxy - CC 697-15-54	80	pulled down reserve pit - put in pond (filtered)	
7/30/2008	CC 697-15-54 Pond 1 - Bobtail	Oxy - CC 697-15-54	80	pulled down reserve pit - put in pond (filtered)	
7/8/2008	CC 697-15-54 Pond 1 - Bobtail	Oxy - CC Pond 7	80	pulled down reserve pit - put in pond (filtered)	
7/8/2008	CC 697-15-54 Pond 1 - Bobtail	Oxy - CC Pond 7	160	pulled down reserve pit - put in pond (filtered)	

source: OXY NOAV Response 9/10/08

ATTACHMENT 8
Haul Ticket for 8/28/06 through 10/7/06



SERVICE ORDER TICKET NO. 21712

DALBO, INC.
OIL & WATER SERVICE
P.O. BOX 1169 • VERNAL, UTAH 84078
PHONE (435) 789-0749

BILL TO: OCCIDENTAL OIL & GAS

LOCATION: 697-15-23

P.O. NO.

BY

DATE 8/28/2006 10/7/2006

180	FLOWBACK	DELIVERD TO 697-15-2[illegible]	4.5 HOURS
1680	FLOWBACK	2 LOADS BOBTAIL (608-43-31)	43.5 HOURS
60	FLOWBACK	21 LOADS BOBTAIL (609-2)	1.5 HOURS
3310	FLOWBACK	1 LOAD BOBTAIL (609-33)	47.5 HOURS
10920	FLOWBACK	42 LOADS BOBTAIL (6[illegible]-21-41)	[illegible] HOURS
1010	FLOWBACK	133 LOADS BOBTAIL (697-15-54)	17.5 HOURS
3440	KCL	13 LOADS BOBTAIL (697-23-16)	117 HOURS
2130	FLOWBACK	42 LOADS BOBTAIL (697-14-01)	71 HOURS
170	KCL	24 LOADS BOBTAIL (697-14-01)	[illegible] HOURS
90	FRESH	2 LOADS BOBTAIL (79[illegible]-14-01)	2 HOURS
200	FLOWBACK	1 LOAD BOBTAIL (LATHEM SPOND)	4 HOURS
		4 LOADS BOBTAIL (R[illegible]SE OUT TRUCK)	

Reviewed By: TROY PARRISH

11-15-06

Well # Split

AFE # Split

G/L # 33280

MISC CHARGES
FUEL SURCHARGE @ $7.40 PER HOUR
474.5 HOURS @ $7.40 = $3511.30
LATHEMS POND WATER LOADING FEE @ $15.00 PER LOAD
1 LOAD @ $15.00 = $15.00

REQUESTED BY: MARK ELLIOT

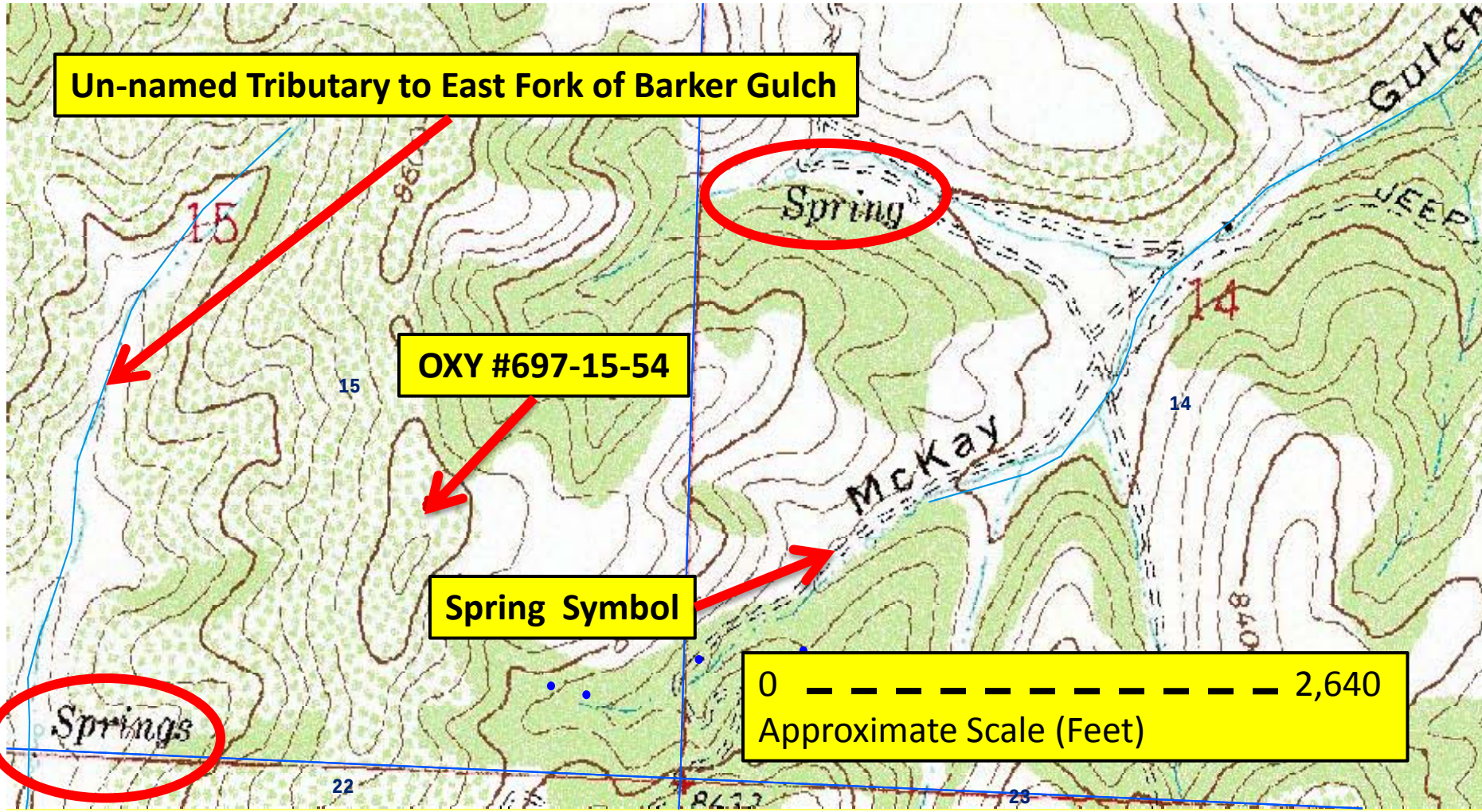
Remarks

SIGNATURE

MISC. CHGS.	$ 3,526.30	
HOURS	474.5	0
RATE	60.00	60.00
[redacted]	$ 41,486.30	

10,920 "FLOWBACK", 133 Loads from 697-15-54 Pit

ATTACHMENT 9
SPRINGS AND SURFACE WATER FEATURES IN THE VICINITY OF
OXY CASCADE CREEK #697-15-54



ATTACHMENT 10
MW-1 SOIL BORING LOG
OXY CASCADE CREEK
15-54 WELL PAD

Walsh
Environmental Scientists and Engineers, LLC

SOIL BORING LOG

Project Number	Boring Number	Location Sketch or Description
7830-160	MW-1	Approximate Location 

Site Name: 15-54	**Address** Conn Camp, DeBeque, CO			
Elevation:	**Drilling Contractor:** High Plains Drilling			
Drilling Method and Equipment:	HSA w/ rotary coring CME 850 LAR			
Water Level & Date:	**Start:** 9/19/08	**Finish** 9/19/08	**Logger:** D. Spencer	

Static Water Level	Depth Below Surface	Sample Interval	Sample Tag No.	Sample Recovery (inches)	Standard Penetration Test Results 6"/6"/6" (N)	Soil Description: USCS Group Symbol, Name, Graduation or Plasticity. Particle Size Distribution or Consistency, Soil Structure, Mineralogy	Symbol of USCS Log	Comments: PID Readings (ppm)
	0					0-15' Rip-rap and engineered base course fill. Ranges from grain-supported gravel to bolder sized particles to clayey gravelly sands. Light grey rock materials supported in a brown, sl. Moist to moist sandy clay fill.	Fill	
	5		7'		Sampler refusal			3.0 ppm
	10				Sampler refusal			
	15							
▽ (16)			17'	36		15-16' Basalt flow, very hard penetration	BR	
						16-17' Weathered Bedrock Sandstone, slightly moist to V. moist adjacent to cleats in thinly parted coal seams	WBR BR	0.7 ppm
	20			60		17-26' Bedrock Sandstone, clayey to silty, interbedded with coal thin seams, sandy Claystone , and Marlstone. Sl. Moist to moist at partings. Buff grey to rust to lt. brown. Fractures and cleats apparent		
	25							
▼ (26)			26'	60		26-27' Weathered bedrock sandstone Fractures apparent, very moist to saturated	WBR BR	0.0 ppm
	30					27-28' Bedrock Sandstone, interbedded with sandy Claystone, and Marlstone. Buff grey to rust to lt. brown.	TD=28	
	35							

Notes: No hydrocarbon odors or staining observed in soil profile. PID indicated background concentrations throughout drilling activities.

**"Weathered Bedrock Sandstone.
Slightly moist to V. moist adjacent to cleats in thinly parted coal seams"**

"Fractures and cleats apparent"

**"Weathered bedrock sandstone.
Fractures apparent, very moist to saturated"**

ATTACHMENT 11
MW-2 SOIL BORING LOG
OXY CASCADE CREEK
15-54 WELL PAD

Walsh
Environmental Scientists and Engineers, LLC

SOIL BORING LOG

Project Number	Boring Number	Location Sketch or Description
7830-160	MW-2	Approximate Location; N; Existing Well Pad

Site Name:	15-54	**Address**	Conn Camp, DeBeque, CO
Elevation:		**Drilling Contractor:**	High Plains Drilling
Drilling Method and Equipment:		HSA w/ rotary coring CME 850 LAR	
Water Level & Date:		**Start:** 9/17/08 **Finish** 9/18/08	**Logger:** D. Spencer

Static Water Level	Depth Below Surface	Sample Interval	Sample Tag No.	Sample Recovery (Inches)	Standard Penetration Test Results 6"/6"/6" (N)	Soil Description: USCS Group Symbol, Name, Graduation or Plasticity. Particle Size Distribution or Consistency, Soil Structure, Mineralogy	Symbol of USCS Log	Comments: PID Readings (ppm)
					NA	6-8" topsoil	OH	
						0.5-2.5' sandy CLAY, moist brown, loose	CL/OH	
	5		5'		20 – 50/2"	2.5-5.5' Weathered Bedrock Sandstone, slightly moist to sl. moist	WBR	0.1 ppm
▽ (6.5)						5.5-6.5 Bedrock sandstone/claystone	BR	
			6.8	36		6.5-8' Weathered Bedrock Sandstone, slightly moist to V. moist adjacent to cleats in thinly parted coal seams	~~WBR~~ BR	0.2 ppm
	10			60		8-17' Bedrock Sandstone, clayey to silty, interbedded with coal thin seams, sandy Claystone , and Marlstone. Sl. Moist to moist at partings. Buff grey to rust to lt. brown Fractures and cleats apparent		
	15							
▼ (17)			17.5	57		17-17.5' Weathered bedrock sandstone Fractures apparent, very moist to saturated	~~WBR~~ BR	0.0 ppm
	20					17.5-19' Bedrock Sandstone, interbedded with sandy Claystone, and Marlstone. Buff grey to rust to lt. brown	TD=19'	
	25							
	30							
	35							

Notes: No hydrocarbon odors or staining observed in soil profile. PID indicated background concentrations throughout drilling activities.

"Weathered Bedrock Sandstone. Slightly moist to V. moist adjacent to cleats in thinly parted coal seams"

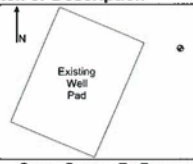
"Fractures and cleats apparent"

"Weathered bedrock sandstone. Fractures apparent, very moist to saturated"

ATTACHMENT 12
MW-3 SOIL BORING LOG
OXY CASCADE CREEK
15-54 WELL PAD

Walsh
Environmental Scientists and Engineers, LLC

SOIL BORING LOG

Project Number	Boring Number	Location Sketch or Description
7830-160	MW-3	Approximate Location 

Site Name:	15-54	**Address**	Conn Camp, DeBeque, CO		
Elevation:		**Drilling Contractor:**	High Plains Drilling		
Drilling Method and Equipment:		HSA w/ rotary coring CME 850 LAR			
Water Level & Date:		**Start:** 9/18/08	**Finish** 9/18/08	**Logger:**	D. Spencer

Static Water Level	Depth Below Surface	Sample: Interval	Sample: Tag No.	Sample: Recovery (inches)	Standard Penetration Test Results 6"/6"/6" (N)	Soil Description: USCS Group Symbol, Name, Graduation or Plasticity. Particle Size Distribution or Consistency, Soil Structure, Mineralogy	Symbol of USCS Log	Comments: PID Readings (ppm)
					NA	0-6" Topsoil	OH	
	5		4'		6 / 7 / 8	0.5-6' sandy CLAY, moist brown, loose.	Cl	0.1 ppm
	10				Sampler Refusal	6-9' Weathered Bedrock Sandstone, slightly moist	WBR	
▽ (13)			12'	48		9-12' Bedrock Sandstone, clayey to silty, interbedded with coal thin seams, sandy Claystone , and Marlstone. Sl. Moist to moist at partings. Buff grey to rust to lt. brown.	BR	0.0 ppm
	15			60		12-15.5' Weathered Bedrock Sandstone, slightly moist to V. moist adjacent to cleats in thinly parted coal seams	WBR	
						15.5-20' Bedrock Sandstone, clayey to silty, interbedded with sandy Claystone, and Marlstone. Dry to sl. moist. Buff grey to rust to lt. brown. Fractures and cleats apparent	BR	
	20			60		20-23 Weathered bedrock sandstone. Fractures apparent, very moist to saturated.	WBR	
▼ (22)								
	25						TD=23'	
	30							
	35							

Notes: No hydrocarbon odors or staining observed in soil profile. PID indicated background concentrations throughout drilling activities.

"Weathered Bedrock Sandstone. Slightly moist to V. moist adjacent to cleats in thinly parted coal seams"

"Weathered bedrock sandstone. Fractures apparent, very moist to saturated"

ATTACHMENT 13
MW-4 SOIL BORING LOG
OXY CASCADE CREEK
15-54 WELL PAD

Walsh
Environmental Scientists and Engineers, LLC

SOIL BORING LOG

Project Number	Boring Number	Location Sketch or Description
7830-160	MW-4	Approximate Location 

Site Name:	15-54	**Address**	Conn Camp, DeBeque, CO		
Elevation:		**Drilling Contractor:**	High Plains Drilling		
Drilling Method and Equipment:		HSA w/ rotary coring CME 850 LAR			
Water Level & Date:		**Start:** 9/18/08	**Finish** 9/19/08	**Logger:**	D. Spencer

Static Water Level	Depth Below Surface	Sample Interval	Sample Tag No.	Sample Recovery (inches)	Standard Penetration Test Results 6"/6"/6" (N)	Soil Description: USCS Group Symbol, Name, Graduation or Plasticity. Particle Size Distribution or Consistency, Soil Structure, Mineralogy	Symbol of USCS Log	Comments: PID Readings (ppm)
					NA	6-8" topsoil	OH	
						0.5-5' sandy CLAY, moist brown, loose.	CL	
	5		5'		10 / 13 / 30			0.2 ppm
▽	(8)		8.5	42		5-8.5' Weathered Bedrock Sandstone, slightly moist to saturated adjacent to cleats in thinly parted coal seams.	WBR	0.0 ppm
	10			60		8.5-27.5 Bedrock Sandstone, clayey to silty, interbedded with coal thin seams (16-16.5'), sandy Claystone , and Marlstone. Dry to sl. moist. Buff grey to rust to lt. brown.	BR	
	15			60				
	20			60				
	25			60				
	30						TD=27.5	
	35							

Notes: No hydrocarbon odors or staining observed in soil profile. PID indicated background concentrations throughout drilling activities.

"Weathered Bedrock Sandstone. Slightly moist to V. moist adjacent to cleats in thinly parted coal seams"

ATTACHMENT 14
HAUL TICKET FOR 7/12/2005
260 BBLS Prod H20
FROM 705-22-43 PIT

Fluid Hauling
Utah, Colorado, California
1-800-421-4063

DALBO, INC.
P.O. Box 1168
Vernal, Utah 84078
(435) 789-0743

24-hour
Radio Dispatched

D 139860

697-15-54

Date July 12th 2005

Bill To Oxy USA

To Black Mountain Disposal

Location Cascade Creek 697-15-54

From Reserve Pit 705-22-43

P.O. #

Driver Michael D. Guacanitovs

Bbls.	Items	Description of Work
260	Prod H2o	Hauled two loads of Production
		water out to B.M.D.
		Black Mountain disposal
		- off site disposal
		NOTE: Skimmed pit to Remove
		oily film while loading tk
		Dispatched By: D.B. Reeves
		Requested By: Lane B.

Water Fee N/A

Road Permits Fee N/A

Disposal Fee B.M.D. Ticket # 19743

Customer's Signature

Truck No. 139
Loads 2
Start Hr. 900 A M.
Stop Hr. 300 P M.
Total 6 Hrs.
Per Hr. $90.00
Trk Total $540.00

592.80

TOTAL ~~$540.00~~ 1132.80

"From Reserve Pit 705-22-43"

"260 bbls Prod H2O"

"skimmed pit to remove oily film while loading"

ATTACHMENT 15
HAUL TICKET FOR 12/28/2005
130 BBLS Production H20
FROM #1 Production H20 Tank
@ So Compressor Station

Fluid Hauling
Utah, Colorado, California
1-800-421-4063

DALBO, INC.
P.O. Box 1168
Vernal, Utah 84078
(435) 789-0743

24-hour
Radio Dispatched

D 134281

Bill To Oxy

Date 12-28-05

To Black Mountain Disposal

Location 697-15-54 Cascade CR

From #1 Production H2o Tank @ So Compressor Station

P.O. #

Driver Robert Pierson

Bbls.	Items	Description of Work
130	Production H2o	hauling to Disposal
		Note: Had to gravity flow so wouldn't get ANY condensate in load of H2o. Slow Loading
		Dispatched by Self
		Requested by Dave / Chris

Truck No. 139+T65
Loads 1
Start Hr. 11:30 A.M.
Stop Hr. 3:30 P.M.
Total 4 Hrs.
Per Hr. $95.00
Trk Total $380.00

Water Fee
Road Permits Fee
Disposal Fee ticket # 21797 – $205.40 $205.40

Customer's Signature

TOTAL $585.40

"From #1 Production H2O Tank" @ So Compressor Station

"130 bbls Production H2O"

"Had to gravity flow so wouldn't get any condensate in load of H2O, slow loading."

ATTACHMENT 16
HAUL TICKET FOR 1/11/06
130 BBLS Production H20
FROM 797-05-52 Pit @ Cascade Cr

Fluid Hauling
Utah, Colorado, California
1-800-421-4063

DALBO, INC.

P.O. Box 1168
Vernal, Utah 84078
(435) 789-0743

24-hour
Radio Dispatched

D 136917

Date 1-11-06

Bill To Oxy

To Black Mountain Disposal

Location 697-15-54 Cascade Cr

From 797-05-52 Pit @ Cascade Cr

P.O. #

Driver Robert Pierson

Bbls.	Items	Description of Work
130	Production H2o	hauling to Disposal
		Dispatched by Self
		Requested by Lane/Chris
		Water Fee
		Road Permits Fee
		Disposal Fee 205.40 ticket # 2945 AFE # 90570346

Truck No. 84 T65

Loads 1

Start Hr. 3 A.M.

Stop Hr. 6 A.M.

Total 3 Hrs.

Per Hr. $95.00

Trk Total $285.00

205.40

TOTAL 490.40

Customer's Signature

"From 797-05-52 Pit @ Cascade Cr

"130 bbls Production H2O"

ATTACHMENT 17
HAUL TICKET FOR 10/9/2006
320 BBLS Prod H20
FROM 705-22-43 PIT

[redacted]

Fluid Hauling
Utah & Colorado
1-800-421-4063

DALBO, INC.
P.O. Box 1168
Vernal, Utah 84078
(435) 789-0743

24-hour
Radio Dispatched

D 222246

Date 10-9-06

Bill To OXY

To Pit At 697-15-59

Location 697-15-54

From Prod tank — **"From Prod tank"**

P.O. #

Truck # 59

Driver Allen Freeman

Bbls.	Name	Description of Work
320	Prod H2O	Pull Prod H2O & clean up on location. — **"320 bbls Prod H2O"**

Reviewed By:
LANE DOLEY
[signature] 11-3-06
W.: 697-15-59
AFE: 18511
59008

Requested by OXY
Dispatched by R.B.

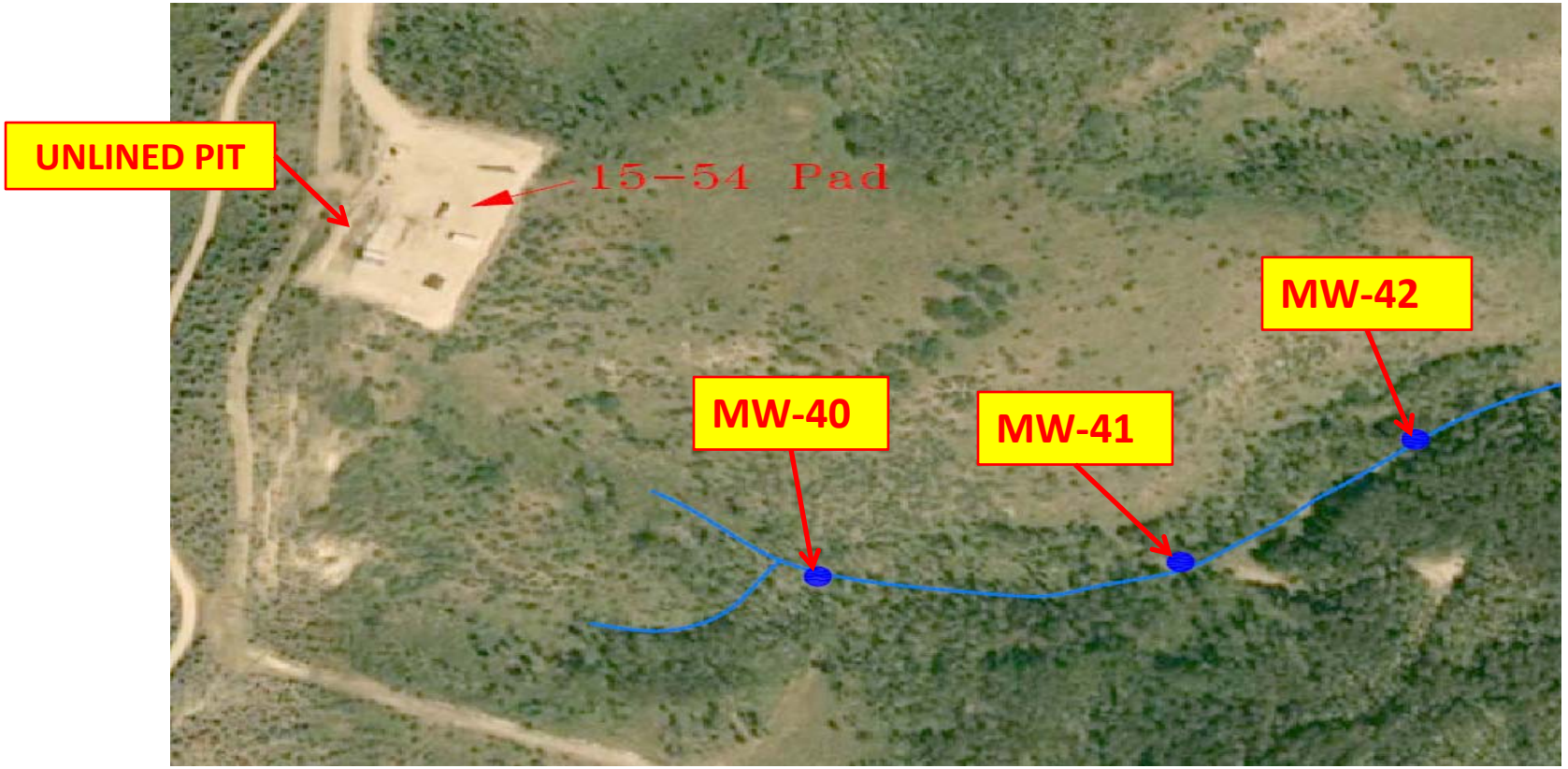
Loads 4
Start Hr. 12:00 PM
Stop Hr. 3:00 PM
Total 3.0 Hrs.
Per Hr. 80.00
Trk Total 240.00

Water Loading Fee from	☐ Loads ☐ Bbls @	☐ Load ☐ Bbl		
Water Loading Fee from	☐ Loads ☐ Bbls @	☐ Load ☐ Bbl		
Fuel Surcharge	3.0 Hours @ 7.40 per hour		22.20	
Disposal Ticket #	Disposal Fee			
Misc Charges	☐ Road Permit ☐ Subsistence ☐ Other			

GRAND TOTAL 262.20

Customer's Signature

ATTACHMENT 18
PROPOSED MONITORING WELL LOCATIONS
REVISED INVESTIGATION PLAN, SUBMITTED by OXY on 10/12/2009



Explanation

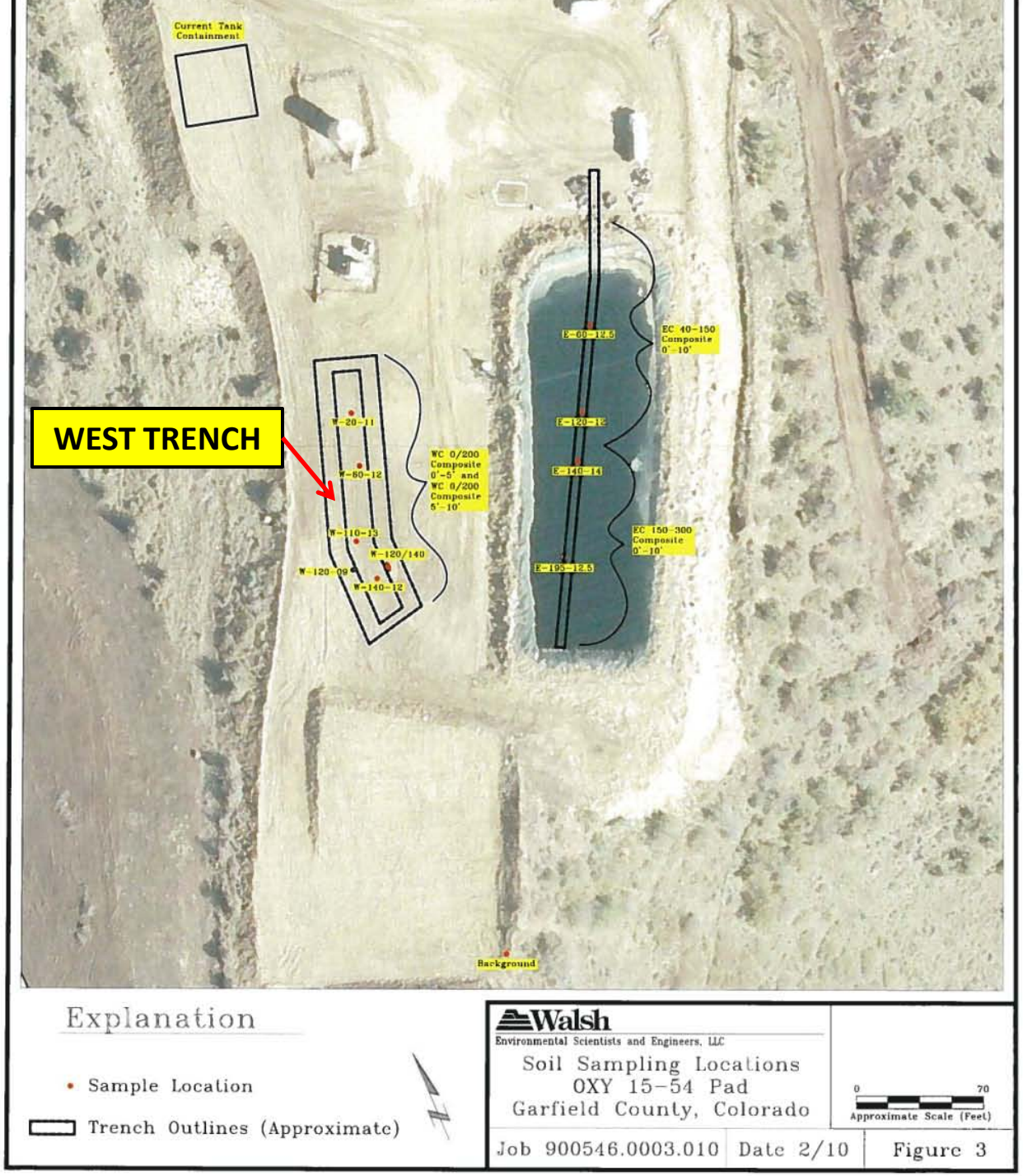
- Existing Monitoring Well
- Proposed Monitoring Well
- Valley Floor & Presumed Alluvial Aquifer

Walsh
Environmental Scientists and Engineers, LLC

Proposed Well Locations
OXY 697-15-54 NOAV
Garfield County, Colorado

0 300
Approximate Scale (Feet)

Job 900248.7830.181	Date 9/09	Figure 2



ATTACHMENT 19
OXY CASCADE CREEK #697-15-54
WEST TRENCH THROUGH
RECLAIMED
UNLINED PRODUCTION PIT

ATTACHMENT 20
OXY CASCADE CREEK #697-15-54 WEST TRENCH
SOIL CHARACTERIZATION ANALYTICAL RESULTS

BACKGROUND SAMPLES

Table 2 - West Trench (pit) Soil Characterization Analtyical Results

Sample analyte	Analytical Results (mg/kg, unless noted)										Regulatory Limit
	WC-0/200	W-120-9	W-120/140	W-60-12	W-20-11	W-110-13	W-140-12	WC 0/200 5-10	BG1	BG2	
Sample Depth (feet)	0-5	9	5-6	12	11	13	12	5-10	0-1	0-1	
TPH GRO	6.3	1600	180	4.3	30	0.78	2.5	17			*
TPH DRO	140	1500	380	55	420	25	140	940			*
Field PID Headspace (ppm)	65.8	528	210	95	185	6	35				
Benzene	BDL	BDL	0.86	0.012	0.0031	BDL	BDL	0.023			
Toluene	BDL	12	2.8	0.21	0.062	BDL	BDL	0.23			
Ethylbenzene	BDL	10	0.8	0.051	0.094	BDL	0.006	0.018			
Xylenes (total)	0.086	97	15	1.7	2.3	BDL	0.11	2.3			
Electrical conductivity (umhos/cm)	1.91	5.6	7.9	5.3	2.2	3.78	7.7	8.7	0.34	0.76	< 4
Sat Paste SAR	4.36	11	20.1	31.3	52.3	10.0	71.1	26.5	1.4	0.9	< 12
Sat Paste pH	7.59	7.59	7.84	8.08	9	7.73	8.47	7.9	7.92	7.57	6 to 9
Bicarbonate	177	95	229.0	169.0	295.0	159.0	366.0	307.0	147.0	235.0	
Chloride	100	680	1200	720	200	360	730	990	16	23	
Sulfate	61	BDL	240	100	BDL	160	76	490	BDL	BDL	
Calcium	6400	4500	15000	5600	3500	6900	5800	15000	4200	4800	
Magnesium	6800	7500	5600	8400	7800	7200	8200	5800	6600	6500	
Potassium	1600	1500	3000	1200	3900	1400	3300	2500	760	1300	
Sodium	3100	6000	2400	8500	5400	6300	6100	3100	6000	2000	
Sat Paste Calcium	143	310	350	69	3	250	42	320	34	106	
Sat Paste Magnesium	20	44	31	11	<1	14	3	28	4	13	
Sat Paste Sodium	210	780	1460	1060	410	600	1770	1840	32	36	
Sat Paste Carbonate	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	
Sat Paste Bicarbonate	177	95	229	169	295	159	366	307	147	235	

* - 1,000 mg/kg total for sensitive areas; 10,000 mg/kg total in non-sensitive areas

BDL = Below detection limit

COGCC Table 910-1 regulatory limits in effect at pit closure (2008)

SAR, conductivity, and pH apply to soil within three feet of ground surface only.