OPERATING PERMIT APPLICATION

MONTANA LIMESTONE RESOURCES

APPENDIX B

WATERSHED INFORMATION

Prepared for:

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Watershed Information

The following report provides basic information about the watersheds affected by the proposed quarry and areas impacted by access roads and power for the Montana Limestone Resources project, contained entirely within property owned by Washington Limestone Resources. The report is meant to be viewed with the accompanying ACAD plot named MLR Site Watersheds. Also attached is the table Watershed Information in MS Excel format.

The site is located approximately 2.5 miles west of Drummond, MT. The area for the quarry is located on bedrock outcrops. The outlying areas are improved ranchlands, unimproved pasture and forage, and lightly forested sections.

Majority drainages in the area include:

- Tigh Creek - an ephermal stream on the northern part of the property
- Allendale Ditch/Loranson Creek – carries Allendale share water and Lower Willow Creek water
- Clark Fork River

D-1

The D-1 drainage includes the former Rawhide subdivision, Lorensen Lane, Grace Road where it intersects the property, and the slope above the subdivision. It is comprised of rangeland grasses in good condition and improved gravel roads with ditches and culverts. The outlet is the concrete culvert under Highway 1 at the junction of Highway 1 and Old Highway 10.

Area D-1: 650703 ft² or 14.94 acres

D-2

The D-2 drainage in-situ is comprised of heavily grazed pasture used as a holding area for cattle before market. The ground cover is sparse. There is also an improved gravel road, a ranch house with lawn, outbuildings including a shop and grain storage, and a large equipment pad.

Water running to the north is intercepted by a diversion above the lowermost pasture adjacent to the Clark Fork River and diverted to the Allendale Ditch. Water running to the east is captured by Allendale Ditch upstream of its confluence with the Clark Fork River.

This drainage will be altered by construction and has been divided into three sections, D-2A, B, and C.

Area D-2 (all): 4,804,036 ft² or 110.29 acre

Area D2-A: 996,247 ft² or 22.87 acre

Area D2-B: 807,398 ft² or 18.54 acre

Area D2-C: 3,000,391 ft² or 68.88 acre

D-3

The D-3 drainage is comprised of improved pasture, feed storage lots, and improved gravel roads. The outlets, depending on point source and slope, are Allendale Ditch and the Clark Fork River.

Area D-3: 898,949 ft^2 or 20.94 acre

D-4

The D-4 drainage is complex. The drainage includes the Lorensen Creek/Allendale Ditch, which is impacted by numerous entities upstream. Water runoff to the Ditch from the MLR/WLR properties is primarily from open pasture lands with normal arid uplands cover including sagebrush and native grasses. Also in the drainage area are improved farmlands with harvestable hay, portions of the Mullan Road, and existing structures for water diversion by other users.

All runoff from this drainage collects in the Allendale Ditch.

Area D-4: 324,941,145 ft^2 or 745.96 acre

D-5

The D-5 drainage is comprised of open pasture lands and unimproved ranch roads. There is an ephermal channel in this drainage which collects runoff and drains to Allendale Ditch. Construction of a road will alter the channel but will not affect the overall acreage. All runoff will be treated with BMP's incorporated into the road design including rip-rap lined ditches, scour pools, and other mitigation methods.

Area D-5: 14,924,786 ft^2 or 342.63 acre

D-6

The D-6 drainage includes all areas draining from the south and west of the deposit, the large western drainage basin, and the river facing slopes of the enclosed State section. This drainage area will be altered by construction activity and has been subdivided into three sections, D-6A, B, and C. All of the runoff for D-6 terminates in a blind channel on the State Land section, where it is assumed to become sheet flow that is captured by various irrigation ditches before entering the Clark Fork River.

D-6A

This drainage includes the river facing slopes of the State section, which is comprised primarily of unimproved, unirrigated pasture with average ground cover of native grasses. Also included are hilly wooded slopes, bedrock outcrops, and unimproved pasture on the western side of the drainage.

This sub-drainage is divided by an ephermal channel that has no outlet, as described above. Approximately 4250 feet of road will be constructed at the head of this drainage which includes a road crossing across the ephermal channel that will include a large culvert assembly. This sub-drainage is delimited by the runoff draining from the west side of the haul road.

D-6B

This drainage includes the large drainage basin to the west of the quarry site. This drainage should not be altered by construction as planned. There are a few ephermal channels within this sub-drainage, one of which will carry treated water from the South Sediment Pond during discharge events. The entire drainage is composed of arid upland pasture with cover varying from sagebrush and sparse native grass to dense native grass dependent on soil type. There are a few bedrock outcrops, and also a few isolated sections of juniper tree cover.

D-6C (South Quarry)

This drainage includes many of the areas impacted by the quarry, including the south side of the quarry, the fines and rejects stockpile, long-term topsoil stockpile, AN storage facility, powder magazine, and approximately 3250 feet of haul road. Outside of mine activity the area is comprised of native sagebrush and grass cover of good quality west of the ephermal drainage, and native grass land interspersed with bedrock outcrops on the west side of the drainage. There are some small forested sections found in and around the ephermal channel.

A sediment pond has been designed to capture runoff for mitigation of suspended sediment in runoff water. The pond will contain a primary spillway with riser and barrel pipe assemblies, and an emergency spillway. All runoff from this drainage will be captured by the sediment pond.

There are two diversions included in this drainage. The West diversion closely follows the 4370 elevation. This channel is a “clean” water diversion and diverts clean runoff water above the fines and rejects piles and other structures to reduce sediment movement. The South diversion captures all runoff from the quarry’s south side disturbance for treatment in the sediment pond before discharge.

Area D-6 (all): 64,211,054 ft^2 or 1474.08 acre

Area D-6A: 9,341,135 ft^2 or 214.44 acre

Area D-6B: 39,348,609 ft^2 or 903.32 acre

Area D6-C: 15,521,310 ft^2 or 356.32 acre

D-7

This drainage is comprised of steep hillsides of native grasses interspersed with bedrock outcrops transitioning to forested areas within an ephermal stream channel. The boundary on the north side of the drainage is the south diversion channel for the quarry. All of the runoff for D-7 terminates in a blind channel near the old homestead at the base of the hill, where it is assumed to become sheet flow that is captured by various irrigation ditches before entering the Clark Fork River.

Area D-7: 3,338,395 ft^2 or 76.64 acre

D-8

This drainage is comprised of steep hillsides of native grasses interspersed with bedrock outcrops transitioning to forested areas within an ephermal stream channel. All of the runoff for D-8 terminates in an irrigation channel which follows closely the base of the cliff before entering a small pond and again entering a channel which leads to the Clark Fork River. Although the upper portion of the drainage is within the permit boundary for the MLR Site there is no anticipated sediment discharge from disturbance at the quarry.

Area D-8: 1,302,791 ft^2 or 29.91 acre

D-9

This drainage includes all areas of the quarry not included in sub-drainage D6-C. The north end of the quarry, the plant site, the main waste dump, crushing and screening stations, and other quarry structures are included in this area. . Outside of mine activity the area is comprised of native sagebrush and grass cover of good quality west of the quarry, and forested sections with good grass cover on the north end of the drainage. The upper portion is comprised on native grasses and sagebrush interspersed with bedrock outcrops.

A sediment pond has been designed to capture runoff for mitigation of suspended sediment in runoff water. The pond will contain a primary spillway with riser and barrel pipe assemblies, and an emergency spillway. All runoff from this drainage will be captured by the sediment pond.

There is one diversion included in this drainage. The North diversion captures water from the base of the main waste dump and diverts it to the sediment pond for treatment of suspended solids before release. This slightly alters the natural runoff for the D-10 drainage.

Area D-9: 9,667.532 ft^2 or 221.94 acre

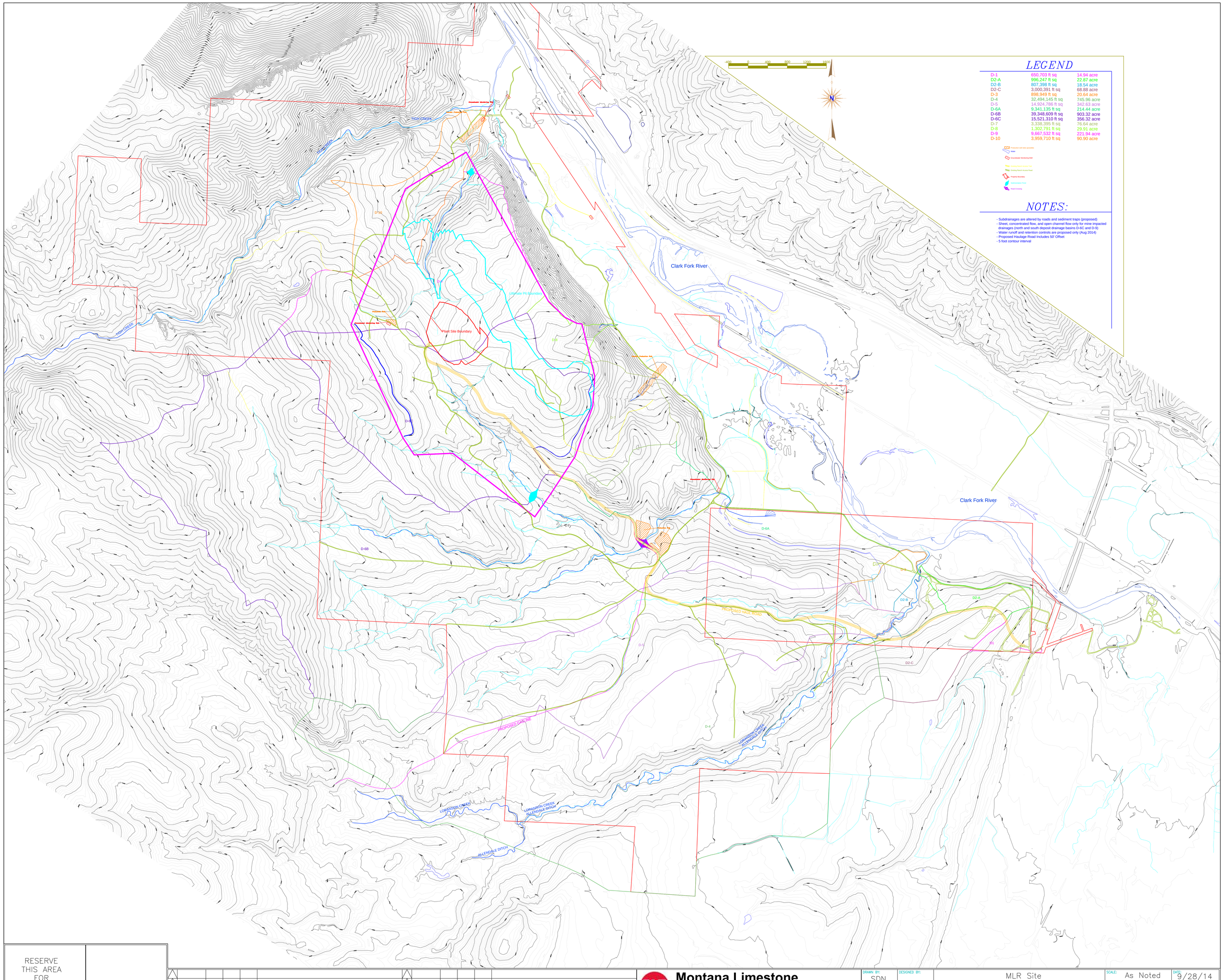
D-10

This drainage is comprised of steep hillsides with some rock outcrops and one unimproved road. It is an isolated drainage that lies between Tigh Creek to the north and D-9 to the south. There is a small ephermal channel bisecting the drainage. The outlet appears to be sheet flow as steepness declines eventually ending in the irrigation channel leading to the Clark Fork River.

Area D-10: 3,595,710 ft^2 or 90.90 acre

Table 1: Drainage Areas

Drainage Areas			
Section	ft²	acre	acre
D-1	650703	43560	14.94
D2-A	996247	43560	22.87
D2-B	807398	43560	18.54
D2-C	3000391	43560	68.88
D-3	898949	43560	20.64
D-4	32494145	43560	745.96
D-5	14924786	43560	342.63
D-6A	9341135	43560	214.44
D-6B	39348609	43560	903.32
D-6C	15521310	43560	356.32
D-7	3338395	43560	76.64
D-8	1302791	43560	29.91
D-9	9667532	43560	221.94
D-10	3959710	43560	90.90



RESERVE THIS AREA FOR ENGINEERS STAMP

REV	DATE	DRAWN	CHECK	DISP	DESCRIPTION	REV	DATE	DRAWN	CHECK	DISP	DESCRIPTION

Montana Limestone Resources LLC

DRAWN BY: SDN	DESIGNED BY:	MLR Site Watersheds Drummond, MT
CHECKED BY: SJC	DISCIPLINE APPR:	
PROJECT ENG:	OPERATIONS APPR:	

SCALE: As Noted
DATE: 9/28/14
DRAWING NUMBER: Plate IV
REV:
SHEET: 1 OF: 1
PROJECT No.: