

Environmental Assessment**for****OCI Lease Modification: WYW079420****Prepared for****Bureau of Land Management
Rock Springs Field Office
280 Highway 191 North
Rock Springs, Wyoming****Prepared by****Hollberg Professional Group PC****EA #: WY-040-EA14-80**

Rock Springs Field Office, Wyoming



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1.0 INTRODUCTION

Proposed Action Title: Lease Modification to WYW079420

Environmental Assessment (EA) Number: WYW-040-EA14-80

Preparing Office Bureau of Land Management (BLM)
Rock Springs Field Office (RSFO)
280 Highway 191 North
Rock Springs, Wyoming 82901

Proposed Action Type and Location: To modify the existing federal sodium lease WYW079420 to include tracts of unleased public lands situated within Section 34, Township 20 North, Range 109 West, as shown in Figure 1.1 through Figure 1.2.

Applicant: OCI Wyoming L.P.
P.O Box 513
Green River, WY 82935

Lease/Serial/Case File No: WYW079420 (Sodium Lease)

1.1 BACKGROUND

OCI Wyoming L.P. (OCI) is seeking to modify Federal Sodium Lease WYW079420 to support expansion of its mining operations. The lease area is part of OCI's Big Island Mine complex, which consists of an underground trona mine and associated soda ash refinery. The lands applied-for are located in the area administered by the BLM Rock Springs Field Office.

The proposed lease modification affects lands adjacent to OCI's current leases located north of Interstate 80, approximately 15 miles northwest of Green River, Wyoming in Sweetwater County. If modified, the lease would be expanded to include all of Section 34, Township 20 North, Range 109 West. The lease modification would add approximately 640 acres to the existing federal lease. Figure 1.1 shows the general location of the Big Island Mine complex.

The company plans to continue to conduct underground trona mining operations on adjacent private lands. The private lease holdings are north, east and west of the proposed lease modification. The lands south of the lease modification are unleased at this time. Figure 1.2 shows the OCI sodium leases from the BLM, Anadarko Petroleum, and private leaseholders as well as the surface ownership in the project area. Section 34 mineral resources are managed by the BLM with the surface owned by the Rock Springs Grazing Association.

OCI owns and operates the Big Island Mine complex. The mining process involves two trona seams, Bed 24 and Bed 25, nominally at 800 feet and 850 feet deep. The Big Island Mine was started in 1962 by the Stauffer Chemical Company and has been in operation continuously since. OCI Chemical L.P. acquired the property in 1996.

As of December 31, 2013, 137.8 million tons of trona ore have been mined from these two beds. Early production from the mine averaged approximately 2 million tons of trona per year. Refinery expansions in the late 1980's have increased total trona production to over 3.5 million tons per year. Future planned expansion may increase mine production to the 4 to 5 million tons per year range.

The underground mining operation uses continuous miners (automated mining equipment) mining in a modified room and pillar method employing a no surface subsidence mine design due to its proximity to the Green River. During the 50-year life of the property, no surface subsidence has been measured. Future mining will continue to maintain a no subsidence mine design.

The OCI refinery purifies the trona ore into soda ash. Soda ash is an essential raw material in glass making, chemicals, detergents, and other industrial products. OCI sells the soda ash domestically and internationally.

1.1.1 Property details

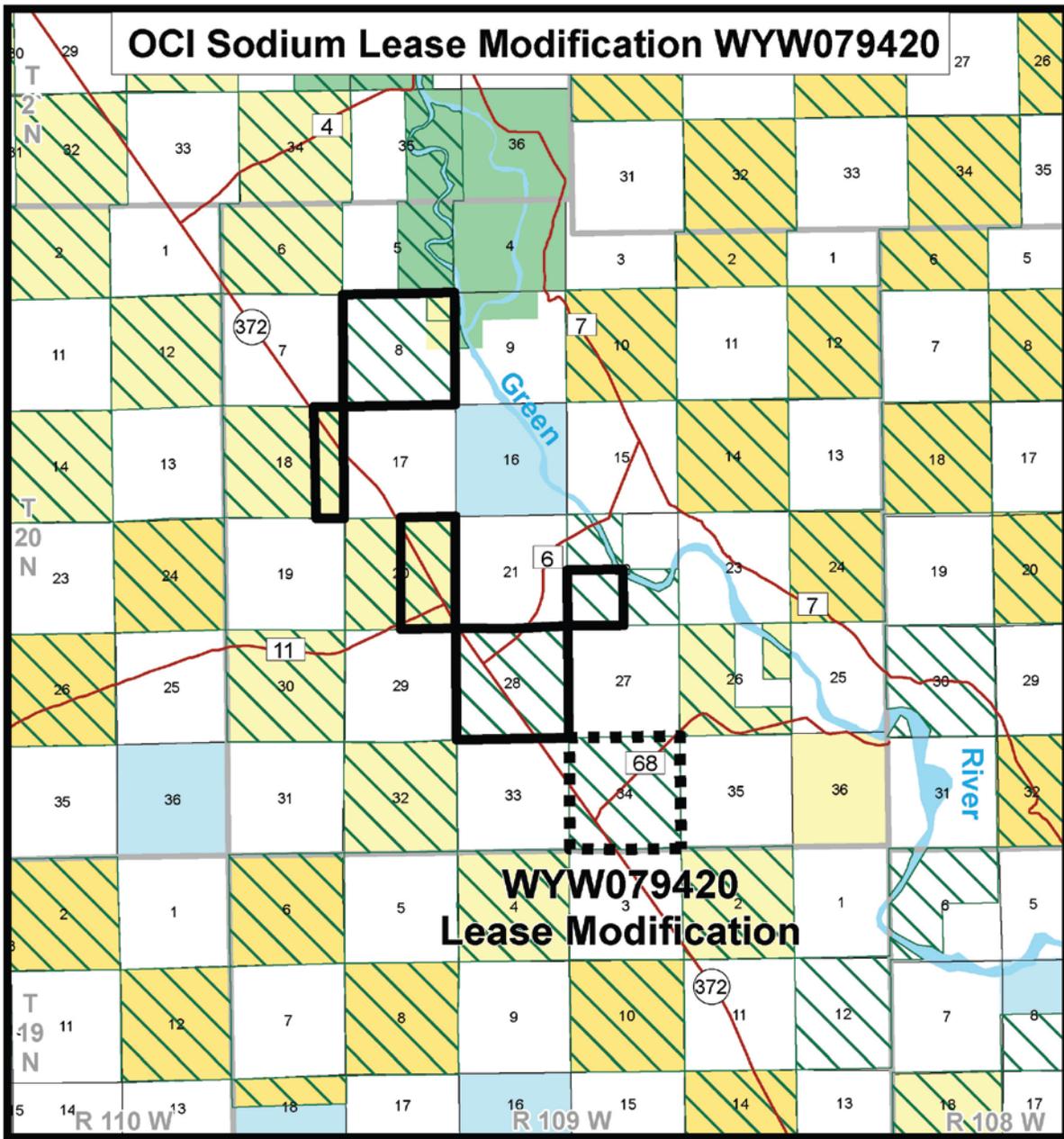
The Big Island Mine property lies northwest of the town of Green River in Sweetwater County Wyoming (Figure 1.1).

Figure 1.3 shows the location of OCI Wyoming sodium leases by lessor (i.e., US Department of Interior, Anadarko Petroleum and private) within the Known Sodium Leasing Area (KSLA) boundary.

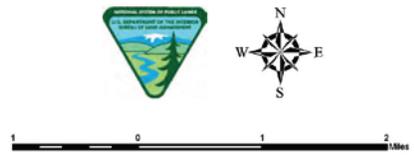
The entire KSLA covers an area containing about 684,180 acres, of which 356,960 acres are managed by the BLM. All unleased public lands within this area are available for leasing consideration. Sodium leasing inside the KSLA boundary is done either competitively through lease-by-application, or noncompetitively by lease modifications or fringe acreage additions.

The proposed lease modification tract borders active sodium leases on three sides and is adjacent to OCI's existing federal sodium lease WYW079420. The Big Island Mine is the only operation that has access to and is currently mining Bed 24 and Bed 25. OCI's lease areas encompass the bulk of these two trona beds.

The modification of the existing lease would provide access to the lands applied-for to allow for the development of the trona mineral resource. This lease modification tract, together with the adjacent leased tracts, forms a contiguous logical reserve block and provides for efficient mining from the existing Big Island Mine workings. The inclusion of this lease modification tract into the existing Big Island mine operation is the most economical and technologically feasible means of recovering these federal trona reserves.



-  WYW079420 Lease Modification
-  WYW079420 Existing Lease
-  Federal Mineral Ownership
-  Bureau of Land Management
-  Bureau of Reclamation
-  Fish and Wildlife Service
-  Private
-  State



No warranty is made by the Bureau of Land Management for use of the data for purposes not intended by BLM

Figure 1.2 Sodium Lease Map with Surface Ownership

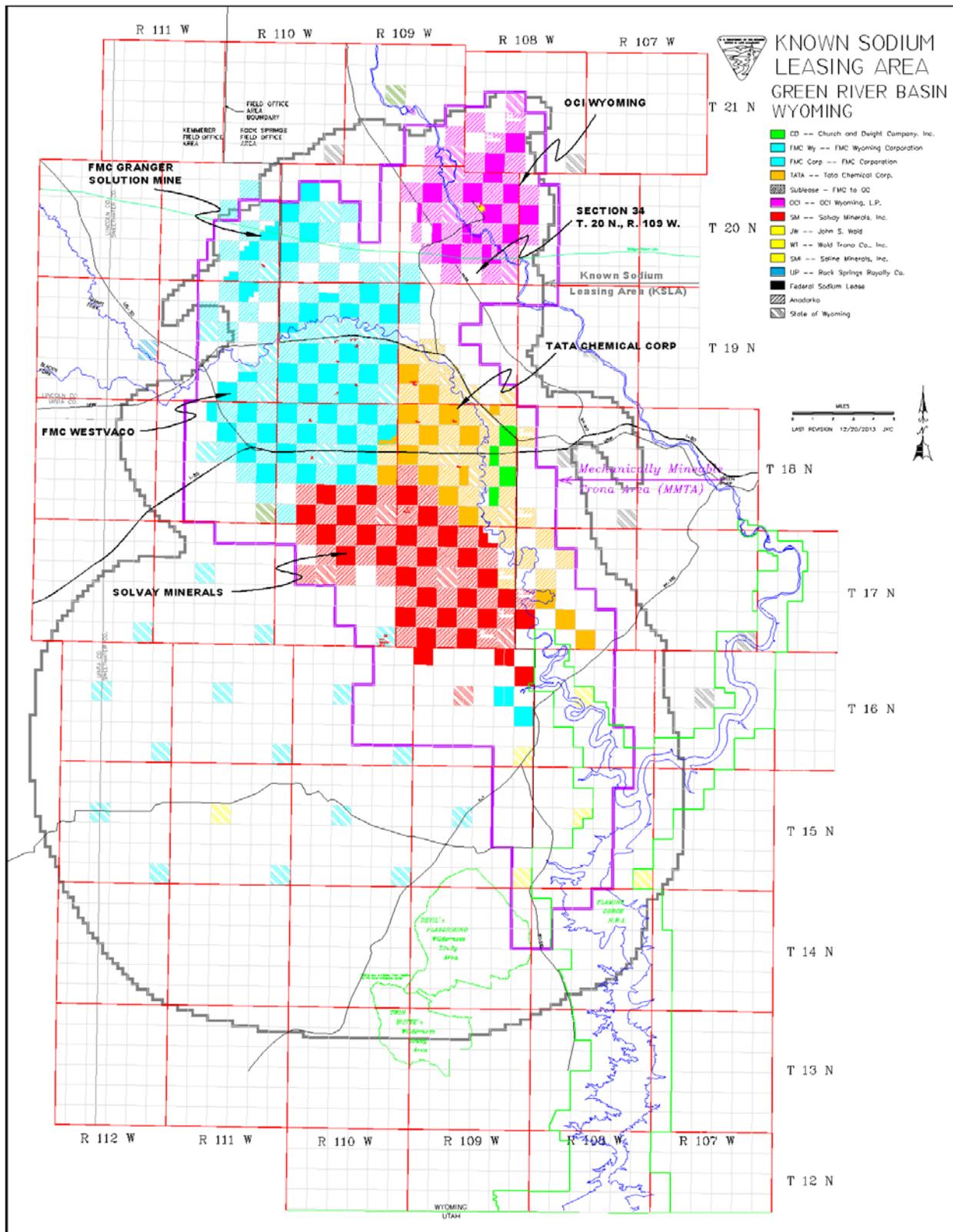


Figure 1.3 Known Sodium Leasing Area Map (KSLA)

1.2 PURPOSE AND NEED FOR THE PROPOSED ACTION

The purpose of the action is to respond to a request to modify federal sodium lease WYW079420 to provide access to public lands for the extraction of federal sodium (trona) resources.

The need for the project is established by the authority given to the BLM under the Mineral Leasing Act of 1920, as amended, and the Federal Land Policy and Management Act of 1976, and the Green River Resource Management Plan and Record of Decision 1997.

Decisions to be made: The BLM will decide whether to modify the existing sodium lease (WYW079420) to include all of Section 34, Township 20 North, Range 109 West for the purposes of extracting the sodium resources. Additionally, if approved, the terms and conditions for the lease modification will be specified.

1.3 CONFORMANCE WITH STATUTES, REGULATIONS, PLANS AND OTHER ENVIRONMENTAL ANALYSES

1.3.1 BLM Resource Management Plan

The Green River Resource Management Plan (RMP) and Record of Decision (ROD) (BLM 1997) allows for sodium mineral leasing and development. The Green River RMP provides land use guidance for sodium mineral leasing within the project area. The exploration and development of solid leasable minerals (i.e. sodium/trona) is subject to the appropriate level of environmental analysis.

Trona is managed as a leasable solid mineral under the Mineral Leasing Act of 1920, as amended and the regulations at 43 CFR 3500 for sodium. The KSLA became effective on April 24, 1978, and defines an area in the Green River Basin where trona deposits are known to occur that are at least four feet in thickness, relatively halite-free with minor in-bed partings, and amenable to conventional underground mining techniques. The BLM Green River RMP and ROD (1997a:14) is paraphrased:

The objective for management of the federal sodium (trona) resource is to provide for both short- and long-range development of federal sodium (trona), in an orderly and timely manner. With appropriate limitations and mitigation requirements for the protection of other resource values, all BLM-administered public lands and Federal lands in the Green River planning area, except for those lands identified as closed, are open to trona resource inventory and exploration to help identify trona resources and their development potential.

The sodium lease modification application, received by the Bureau of Land Management on July 25, 2012, will be processed and evaluated under the following authorities:

- Mineral Leasing Act of 1920 as amended,
- Federal Land Policy and Management Act (FLPMA) of 1976, and

- The National Environmental Policy Act of 1969 (NEPA) as amended (42 U.S.C. 4321 et seq.), its implementing regulations found in Title 40 CFR Part 1500–1508, BLM's National Environmental Policy Act Handbook (H-1790-1) (BLM 1988), BLM's desktop reference, Overview of BLM's NEPA Process (BLM 1996a), and Considering Cumulative Impacts Under the National Environmental Policy Act (Council on Environmental Quality [CEQ] 1997).

1.3.2 Existing Documents

Existing documents that may be related to the proposed project includes the following:

- The BLM Sodium Development Environmental Assessment (EA) and Decision Record (BLM 1982, 1983),
- The BLM Green River RMP and environmental impact statement (EIS) (BLM 1992, 1996b), and the BLM Green River RMP and ROD (1997a).

1.3.3 Review of Select Permits, Approvals, and Authorizations

OCI Wyoming and the Big Island Mine continues to maintain, in good standing, all required permits, approvals and authorizations necessary to mine trona, and produce and sell soda ash. The following major permits, approvals, and authorizations include:

- Mining permit – WDEQ/Land Quality Permit No. 257PT,
- Storm Water Pollution Prevention Plan No. WYR320025, and
- Wyoming Air Quality Operating Permit No. 3-2-119.

If the proposed action is approved the Wyoming Department of Environmental Quality Mining Permit would have to be changed to include Section 34. No other changes to the major permits, approvals, or authorizations would be required by the proposed lease modification.

1.4 SCOPING, PUBLIC INVOLVEMENT AND ISSUES

To assess potential impacts of the Proposed Action, BLM conducted internal BLM and public scoping.

A scoping notice requesting public comment was published on May 24, 2013 on the RSFO website. The 30-day comment period ended on June 24, 2013. During this period, the BLM received two comment letters. Copies of the scoping comment letters scoping comment letters comments are provided for reference in Appendix 1.0.

The proposed action was scoped internally with BLM Rock Springs Field Office resource specialists in 2013. Based on public and BLM internal scoping comments, BLM decided to prepare an EA for the Proposed Action.

The BLM specialists identified the following resources to be analyzed in this EA; air quality, cultural resources, socio-economics, and geology/minerals.

2.0 PROPOSED ACTION AND ALTERNATIVES

2.1 NO ACTION ALTERNATIVE

The No Action Alternative is to reject the application to modify the existing sodium lease (WYW079420) and not add the additional mineable trona in Section 34, T.20N.-R.109W. to the OCI Big Island Mine.

Under the No Action Alternative, OCI would likely bypass the sodium resource in Section 34. This No Action Alternative presumes the federal trona within these lands would not be mined in the near future. Due to Section 34's location within the checkerboard land area, and given the current limitations in underground extraction technology, it is unlikely that OCI, or any other operator, would be able to economically mine the Section 34 resources once current operations move away from these lands. Additionally, under the No Action Alternative, OCI's access to other adjacent underground reserves would be affected.

Under the No Action Alternative, the BLM would continue to manage the federal minerals comprising the lease modification area under the current RMP. The surface lands are privately owned, with retention of subsurface minerals managed by the BLM.

2.2 PROPOSED ACTION

2.2.1 Overview

The Proposed Action is to modify Federal Sodium Lease WYW079420 to include all of Section 34, 6th Principal Meridian, T.20N.-R.109W, containing approximately 640 acres more or less.

The federal minerals in Section 34 are managed by the BLM (Figure 1.2 and Figure 1.3). Federal sodium lease WYW079420 was originally issued to Stauffer Chemical Co. on October 31, 1961 and is currently held by OCI Wyoming LP operating the Big Island Mine.

The Big Island Mine has been in production since 1962. Mining occurs at nominal depths of 800 and 850 feet in trona Beds 24 and 25 as defined by the USGS. Access to the trona beds is via two vertical production shafts and one service shaft. All three shafts are located in Section 15, T20N-R109W, approximately three miles north of the proposed lease modification area.

The proposed lease modification tract is adjacent to OCI's current mining operations. Under the proposed action, the sodium resource would be mined from OCI's existing mine workings that are currently at the northern boundary of Section 34 as shown in Figure 2.5.

The existing mine infrastructure provides an economical and technological mechanism for mining these trona resources. Mining of the trona in the lease modification area is anticipated to take approximately four years. The estimated recoverable reserves within the area of the proposed lease modification are predicated on several factors including:

- Geologic and mining conditions,

- Trona quality,
- Mining costs,
- Soda Ash Market conditions,
- Environmental concerns, and
- Mine safety.

2.2.2 Mining Permit and Other Required Permits and Approvals

OCI Wyoming would have to modify its mining permit to include Section 34. OCI holds and maintains all other necessary permits and approvals to mine the proposed trona tract and convert it into salable soda ash.

Trona development and production from the proposed lease area would be conducted under the management of the BLM Rock Springs Field office. The lessee is required to provide the BLM with a resource recovery plan and is obligated to mine the lease according to the recovery plan, the associated lease terms, and appropriate rules and regulations.

2.2.3 Description of the KSLA Area

The KSLA is a federally designated area where sodium minerals (trona) are capable of being mined by conventional underground mining methods. Specifically, the trona beds must exceed 4-feet in thickness and be relatively halite-free with minor in-bed partings. The Mechanically Mineable Trona Area (MMTA) is a federally designated area which is mostly within the KSLA and where the trona beds exceed 8-feet thickness, contain trona at a grade greater than 85%, contain less than 2% salt, and are at a depth no greater than 2,000 feet. Figure 1.3 shows the KSLA and MMTA boundaries along with the major leaseholders. OCI's leases are bounded on the north and east by the KSLA and MMTA boundaries.

In general, mineral ownership in the KSLA is a checkerboard pattern between the BLM, the State of Wyoming, and private ownership. This pattern was created as part of the Pacific Railroad Act of 1864 granting every other section 20 miles on either side of the railroad to the Union Pacific Railroad and Section 16 and 36 of each township to the State of Wyoming. Anadarko became the second largest mineral owner in the KSLA when it acquired ownership of the UP Resources.

2.2.4 Drill Hole Data and Bed thickness

Recent exploration drilling (License WYW180005) along the OCI southern lease area has identified trona resources that could be accessed from the current mine workings in Section 27, T20N, R109W. The trona is of minable thickness and grade and has minimal amounts of salt.

2.2.5 Mining Method and Mine Plan

2.2.5.1 Mining and Processing Facilities

The proposed action would not require any additional surface facilities for mining or processing. All mining and processing will be done by the existing OCI infrastructure.

The underground mining operation uses continuous miners mining in a modified room and pillar method employing a ‘no surface subsidence’ mine design. Over the 50-year life of the property, no surface subsidence has been measured.

The OCI Wyoming refinery purifies the trona ore into soda ash (sodium carbonate). Soda ash is an essential raw material in glass making, chemicals, detergents, and other industrial products. OCI Wyoming sells the soda ash domestically and internationally through OCI Chemical and its affiliates.

2.2.5.2 Mine Equipment and Extraction Plan

OCI’s underground mine is developed with continuous mining equipment, Figure 2.1, operating in a modified room and pillar geometry. Main and sub-main entries are developed with a typical room and pillar geometry containing rectangular to square pillars within the extraction areas, Figure 2.2. Production panels are developed with a modified room and pillar geometry (rhomboid) Figure 2.3 and Figure 2.4.

Figure 2.5 shows the current extent of the Big Island mine and its proximity to Section 34.

The trona mined with the continuous miners is transferred to rubber tired shuttle cars which transport the ore to feeder breakers. The feeder breakers crush the ore and load it onto conveyor belts that carry the ore to the production shafts. OCI has two production shafts that lift the ore from mine level, approximately 900 feet, to the surface for processing. OCI maintains a small, 100,000 tons, enclosed surface raw ore stockpile to smooth the feed to the processing plants.

Total mine areal extraction is approximately 50%. Zero surface subsidence is maintained with this mining plan, therefore protecting surface resources and improvements including the Green River, railroad right-of-way (ROW), processing facilities, and numerous utility corridors.

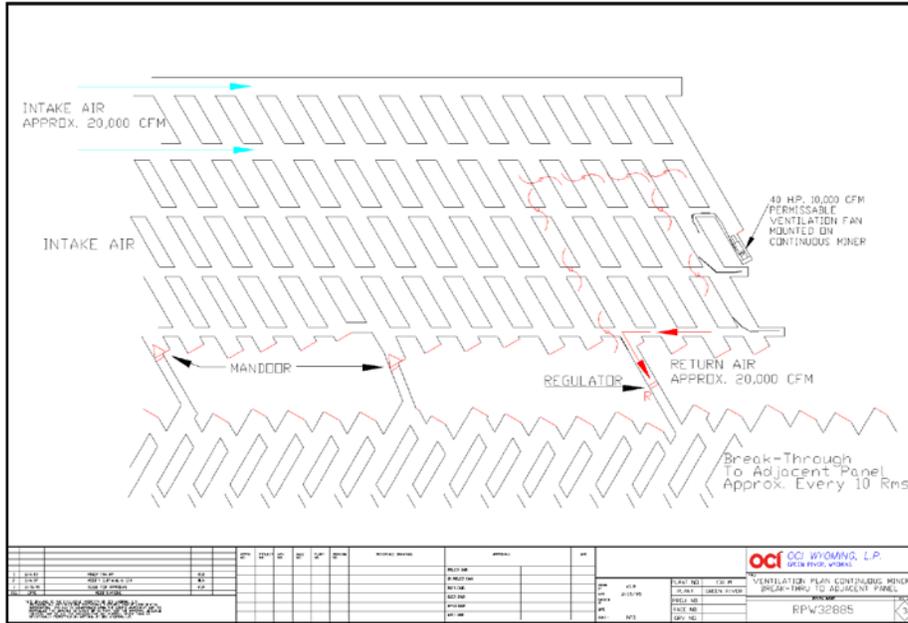


Figure 2.3 Mine Plan, Panel Development

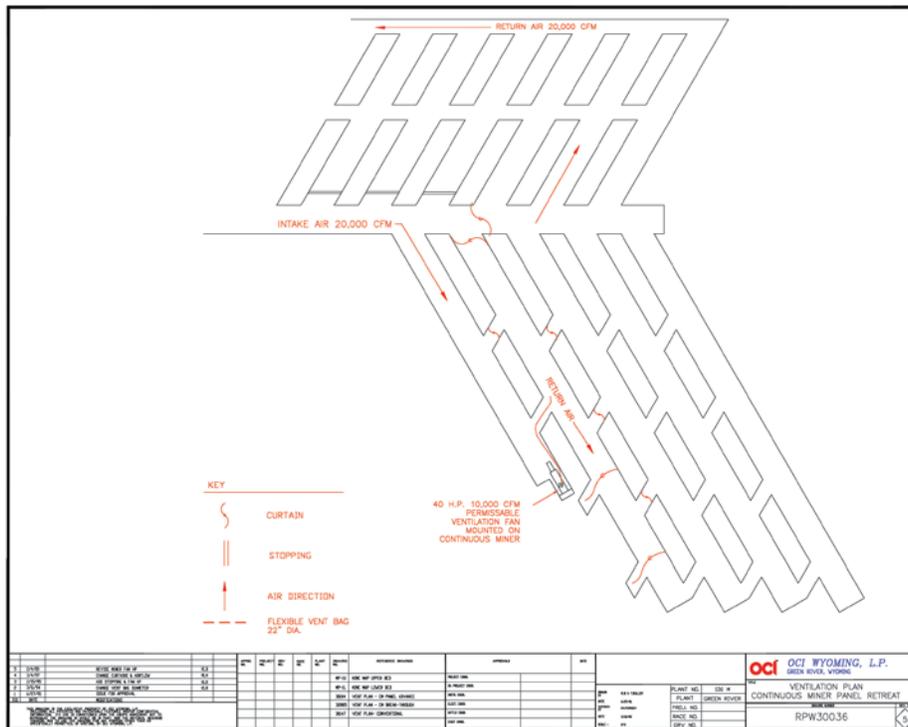


Figure 2.4 Mine Plan Panel Retreat

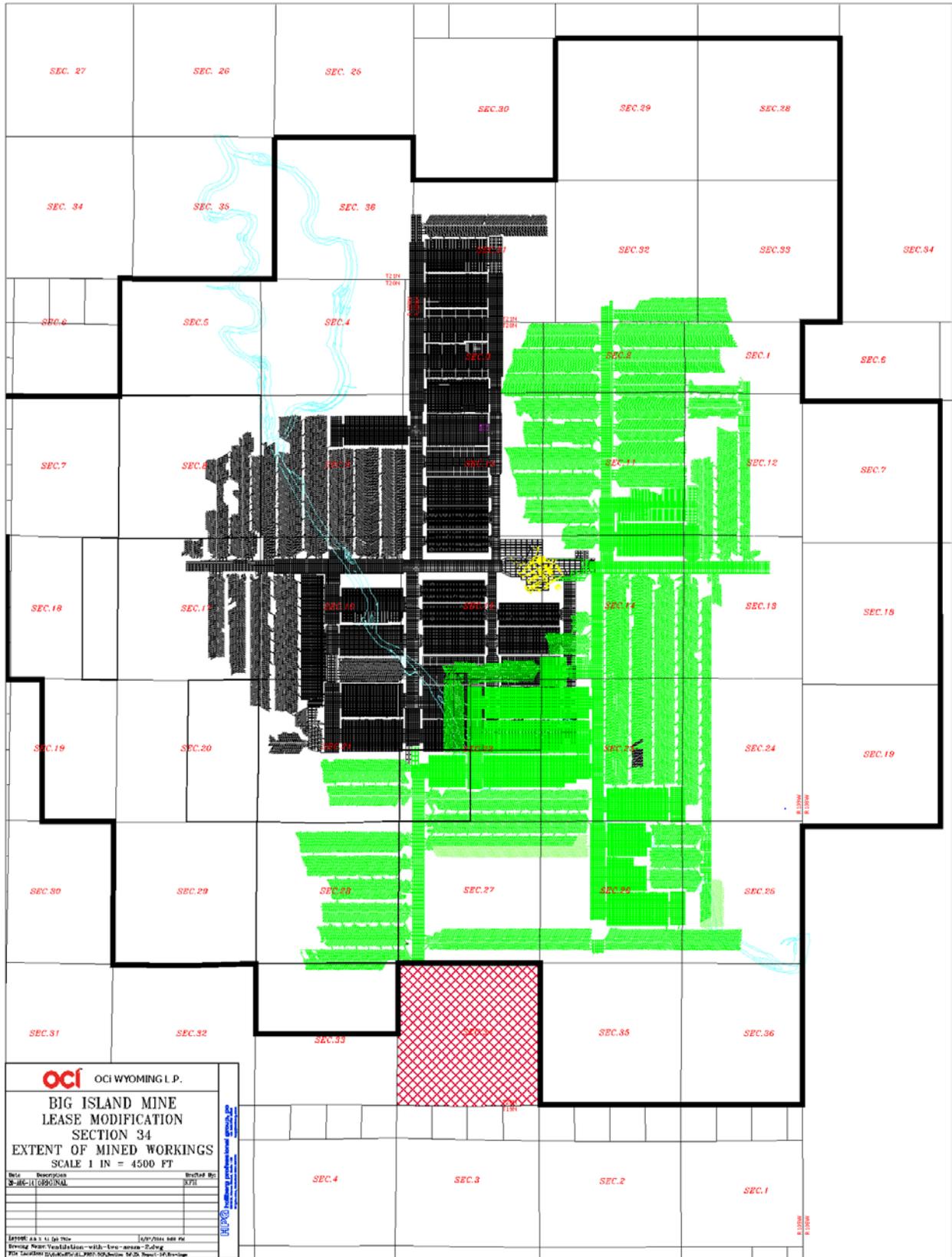


Figure 2.5 Section 34 with Existing Mining Bed 25 and Bed 24

2.2.5.3 Mine Water Discharge and Treatment

The quantity of water entering the mine varies on a monthly basis from zero to 190 gpm primarily from the tailings injected back into the mine workings. Negligible ground water is produced during current mine operations. No substantial changes are expected with proposed development of Section 34.

Excess mine water not needed for dust suppression and not used at the surface support facilities would be managed within the currently approved water management system. No increase in mine water discharge is anticipated in the mining of Section 34.

2.2.5.4 Water Requirements

Collectively, the mine consumes approximately 300 gpm of water for dust suppression and equipment cooling in the mine. This water comes from the Green River as part of OCI's current water rights and ultimately ends up in the raw trona production and the refining process.

Mining operations in Section 34 will not require any additional daily usage of mine water for trona production. However, since the projected trona extraction from Section 34 will extend the mine life by four years, there will be additional water required at the same typical daily rate during the 4-year mine life extension compared to the overall 120-year mine life.

2.2.5.5 Control of Toxic, Hazardous, and Solid Waste Materials

Acid-Forming/Toxic Materials: Acid-forming or toxic materials are not expected to be created or encountered during mining operations.

Hazardous Materials and Waste: OCI maintains files containing Material Safety Data Sheets (MSDS) for all chemicals, compounds, and/or substances that are currently used during approved mine operations. No new chemicals or compounds will be used for the proposed development of Section 34.

OCI has reviewed the U.S. Environmental Protection Agency's (EPA's) Consolidated List of Chemicals subject to Reporting Under Title III of the *Superfund Amendments and Reauthorization Act of 1976* (SARA) (as amended) and EPA's List of Extremely Hazardous Substances as defined in Title 40 CFR Part 355 for hazardous substances proposed for use in this project. All materials anticipated to be used or produced during the implementation of the Proposed Action fall into the following categories:

- fuels - diesel fuel,
- combustion emissions - nitrogen dioxide (NO₂), carbon monoxide (CO), and nonmethane hydrocarbons (NMHCs),
- coolants/antifreezes,
- lubricants - grease (potentially containing complex hydrocarbons and lithium compounds) and motor oil,

- paints, and
- solvents.

There will be no hazardous wastes generated during the mining process. OCI and its contractors would comply with all applicable federal, state, and local laws and regulations. OCI and its contractors would handle and store all hazardous substances in an appropriate manner to prevent contamination of soil and water resources. Any release of hazardous substances (leaks, spills, etc.) in excess of reportable quantities, established in Title 40 CFR Part 117, would be reported as required by the *Comprehensive Environmental Response, Compensation, and Liability Act of 1980* (CERCLA), as amended. If a release of a reportable quantity of any hazardous substances occurs, a report would be furnished to WDEQ and all other appropriate federal and state agencies.

Unanticipated release events (such as spills or leaks) are always possible; however, OCI is committed to all planning and emergency procedures regarding spill prevention, reporting, and cleanup standards required by local, state, and federal laws and regulations should an incident occur.

Fuel Storage: Any additional fuel storage facilities and equipment would be constructed and operated in accordance with all applicable local, state, and federal regulations. Prior to the implementation of the Proposed Action, OCI would update the mine's existing Spill Prevention, Control, and Countermeasure Plan (SPCCP), as necessary, in accordance with Title 40 CFR Part 112.

Disposal of Nonhazardous Materials (Solid and Nonsolid): All nonhazardous material would be disposed of in accordance with appropriate local, state, and federal regulations in OCI's permitted on site landfill.

2.2.5.6 Subsidence and Associated Reclamation

No subsidence associated with the existing mining operations has been measured during the life of the mine. Zero surface subsidence shall be maintained with this mining plan, therefore protecting surface resources and improvements including, the Green River, railroad right-of-way (ROW), processing facilities, and numerous utility corridors.

Section 34 mining will add approximately four years to the total mine life that will delay final mine site reclamation beyond the 120-year mine life projections. Section 34 mining will not require any additional in-mine or surface reclamation.

2.2.5.7 Avoidance of Public Nuisance and Endangerment

No public nuisance or endangerment will occur since there will be no surface subsidence or impact created during Section 34 underground mining. The existing processing facilities have perimeter fencing and in-place access control procedures.

2.2.5.8 General Environmental Protection

Existing federal and state rules and regulations that require extensive monitoring and mitigation for all underground mines in Wyoming would be applied to this proposed Section 34 development to mitigate the environmental consequences associated with mine development and operations. Consistent with the historically approved OCI trona mining operations, OCI complies with required environmental studies in accordance with WDEQ/LQD rules and regulations.

Therefore, for the purpose of this EA, OCI shall maintain continued compliance with all applicable sections of WDEQ/LQD's Rules and Regulations (WDEQ/LQD 2002) and BLM's mitigation guidelines described in the Green River RMP.

In addition to specifying permit requirements, WDEQ/LQD rules and regulations also outline general and specific environmental protection performance standards for underground mining operations. These applicable rules and regulations would be adhered to on BLM-administered lands, private lands, and state-owned lands.

2.3 OTHER ACTION ALTERNATIVES

No other action alternatives were identified for consideration.

2.4 ALTERNATIVES CONSIDERED BUT ELIMINATED FROM DETAILED STUDY

The following alternatives were identified and reviewed during the preparation of this EA. At the conclusion of the review, the EA team screened out the following alternatives as not feasible and not warranting further analysis in this EA.

2.4.1 Hold a competitive Sale of Federal Sodium Lands that would maximize the potential for a New Stand-alone Mine

There is no competitive interest based upon utilization of the lands or mining of the trona deposits from Section 34 for the following reasons:

- The applicant is the lessee of record holding the private, state, and federal leases adjacent to the modification area,
- A single Section of 640 acres would not represent an economic venture based on a stand-alone development of the property, and
- There is no other nearby operation that could economically mine this area.

The most logical physical and economic access to Section 34 is from the applicant's underground mine and adjacent leases which also represents the safest access to develop the lease area.

2.4.2 Smaller Sale Area

Subdividing the section would not provide efficient development or improve its value.

2.4.3 Postpone Lease Sale

Postponing would result in bypassing Section 34. OCI is in position to access Section 34 as early as 2015.

3.0 AFFECTED ENVIRONMENT

3.1 LOCATION, SETTING, AND HISTORICAL USE

The proposed lease modification affects lands adjacent to OCI's current leases at the Big Island Mine property located north of Interstate 80, approximately 15 miles northwest of Green River, Wyoming in Sweetwater County. The Big Island Mine was started in 1962 by the Stauffer Chemical Company and has been in operation continuously since.

OCI Wyoming mines trona on leases managed by the BLM, Anadarko Petroleum, and private leaseholders. Section 34 mineral resources are managed by the BLM with the surface owned by the Rock Springs Grazing Association. The OCI property incorporates two trona seams, Bed 24 and Bed 25, both with proven underground minable reserves. The Big Island Mine is the only mine operation that has access to and is currently mining Bed 24 and Bed 25. OCI's leases encompass the bulk of these two trona beds. As of December 31, 2013, 137.8 million tons of trona ore have been mined from these two beds.

OCI is located in the semi-arid high plateau region of southwestern Wyoming at elevations between 6,200 and 6,600 feet above mean sea level (MSL). Only about one percent (1%) of the land is barren, but the short growing season, rugged topography, poor soils, and limited availability of precipitation make vegetation rather sparse in both variety and productivity. Over most of the area, vegetation is homogeneous in appearance consisting of about 90 percent brush and shrubs, chiefly sagebrush, saltbush, with greasewood and winter fat in drainage areas.

The area has historically been utilized for livestock grazing, wildlife habitat, and recreational hunting. This area provides limited winter grazing for cattle, sheep, and horses. However, stocking rates are low primarily due to sparse vegetation (Soil Conservation Service [SCS] 1988).

3.2 AFFECTED RESOURCE OVERVIEW

Table 3.1 identifies potentially affected resources appropriate for analysis.

**TABLE 3.1
AFFECTED RESOURCES OVERVIEW**

Determination¹	Resource	Impact Discussion
PI	Air Quality/Green House Gas Emissions	See Section 3.3.1 and 4.1 for further detail on existing, environmental, and potential impacts.
NP	Areas of Critical Environmental Concern (ACEC)	No ACECs are located within the project area.
PI	Cultural Resources	See Section 3.3.2 and 4.2 for further detail on existing, environmental, and potential impacts, and mitigations.
NI	Environmental Justice	The action alternatives were reviewed and no impacts to minority and low income populations are expected.
NP	Farmlands: Prime or Unique	No Prime or Unique farmlands are present.
NI	Floodplains	Underground mining with no subsidence would not impact.
NI	Fuels/Fire Management	Underground mining with no subsidence would not impact. Project area is not a fuels management area.
PI	Geology, Geologic Hazards, Mineral Resources	See Section 3.3.3 and 4.3 for further detail on existing, environmental, and potential impacts.
NI	Invasive Species/ Noxious Weeds	Underground mining with no subsidence would not impact. No Invasive Species/Noxious Weeds would be introduced to the lease modification area from mining activity because there would be no surface use or operations.
NI	Lands/Access	Underground mining with no subsidence would not impact access or other land uses because there would be no surface disturbance or use associated with the proposal.
NI	Livestock Grazing	Underground mining with no subsidence would not impact livestock grazing or other land uses because there would be no surface use or operations.
NI	Paleontology	Underground mining with no subsidence would not impact. There are no known sensitive paleontological sites identified in the project area.
NI	Public Health & Safety	Underground mining would not impact public health and safety because no operations would occur on the surface.
NI	Rangeland Health Standards	Underground mining would not impact the health of rangeland or other land uses because there would be no surface use or operations.
NI	Recreation	Expanding the area of underground mining would not impact recreation as there would be no surface use or operations. Underground mining with no subsidence would not impact.
PI	Socioeconomics	See Section 3.3.4 and 4.4 for further detail on existing, environmental, and potential impacts.
NI	Soils	Expanding the area of underground mining would not impact soils because there would be no surface use or operations. Underground mining with no subsidence would not impact.
NI	Special Status Species	Expanding the area of underground mining would not impact Special Status Species or other land uses because there would be no surface use or operations. Underground mining with no subsidence would not impact.
NI	Threatened, Endangered or Candidate Plant Species	Underground mining with no subsidence would not impact. No Threatened, Endangered, or Candidate Plant Species are found in the project area.
NI	Threatened, Endangered or Candidate Animal Species	Underground mining with no subsidence would not impact.

**TABLE 3.1
AFFECTED RESOURCES OVERVIEW**

Determination¹	Resource	Impact Discussion
NI	Wastes (hazardous or solid)	It is not anticipated that hazardous wastes will be generated during the mining process. The impurities, mainly shale, are disposed of either underground or pumped to the existing surface tailings pond system. The increased disposal from Section 34 ore is a small percentage of the overall life of operation tailings disposal.
NI	Water Resources/Quality (drinking/surface/ground)	Underground mining with no subsidence would not impact.
NI	Wetlands/Riparian Zones	Underground mining with no subsidence would not impact.
NI	Wild and Scenic Rivers	Underground mining with no subsidence would not impact.
NP	Wilderness	No wilderness areas exist.
NP	Woodland/Forestry	No woodlands or forestry exist.
NI	Vegetation	Underground mining with no subsidence would not impact.
NI	Visual Resources	Underground mining with no subsidence would not impact Visual Resources or other land uses because there would be no surface use or operations. All activity would be below ground.
NI	Wild Horses and Burros	Underground mining with no subsidence would not impact Wild Horses and Burros or other land uses because there would be no surface use or operations.
NI	Wildlife	Underground mining with no subsidence would not impact use of the surface by wildlife.
¹ Determination PI: <u>P</u> otential <u>I</u> mpact could occur from one or more alternatives; therefore, analyzed in this NEPA Document. NP: <u>N</u> ot <u>P</u> resent in the project area. NI: <u>N</u> o <u>I</u> mpact expected from action alternatives, or potential impacts already addressed in referenced NEPA document(s); therefore, not analyzed in this document.		

3.3 AFFECTED RESOURCES

Resources to be evaluated and addressed were identified during both internal and external scoping included Air Quality and Greenhouse Gasses, Cultural, Geology and Mineral Resources, and Socioeconomics.

3.3.1 Air Quality, Climate, and Greenhouse Gases (GHG)

Air quality refers to the degree to which the ambient air is pollution-free, assessed by measuring a number of indicators of criteria and non-criteria pollutants and visibility.

Air quality in the project area is measured with background concentrations of all criteria pollutants well below the established standards (BLM 1997). Criteria pollutant concentrations are measured by the State of Wyoming, Department of Environmental Quality and are subject to the Clean Air Act and Wyoming Air Quality Standards and Regulation.

The OCI refinery is located within close proximity to the underground mining operation. This plant is operated under a Wyoming Air Quality Operating Permit (Permit No. 3-2-119), requiring monitoring for a variety of air quality pollutants including particulate matter. Permit modeling shows compliance with all National Ambient Air Quality Standards (NAAQS).

The interactions between the human environment and the natural environment in relation to greenhouse gas emissions and global climate change are very complex. A standard way of measuring greenhouse gas emissions and their impact on global climate change is to assess the mass of greenhouse gasses released into the atmosphere over a specified period of time. The mass of Carbon Dioxide Equivalent (CO₂e) emissions will be utilized for this analysis, as it is a commonly used metric for assessing impacts of greenhouse gas emissions on global climate change. The primary greenhouse gasses included in this analysis, and summarized as CO₂e include Carbon Dioxide, Methane, and Nitrous Oxide.

In 1990 estimated global greenhouse gas emissions were 37 Gt CO₂e. In 2010, emissions had risen to 49 Gt CO₂e. At current rates of development, annual global greenhouse gas emissions are expected to reach 58 Gt CO₂e by 2020 (UNEP 2012).

3.3.2 Cultural Resources

The project area is in an area of low site density with little to no potential to contain intact, buried cultural resources. There have been 15 individual projects inventoried in Section 34 T20N-R109W, and the entire section was inventoried in 1994 as part of a proposed land exchange. As a result of these inventories, there have been four prehistoric sites recorded in the section. All four sites are located along an east-trending ephemeral drainage that empties into the Green River, which is located approximately 1.25 miles northeast of the project area. All four sites have been determined to be not eligible for inclusion within the National Register of Historic Places.

3.3.3 Geology, Geologic Hazards, and Mineral Resources

The US Geological Survey recognizes 25 trona beds of economic importance (at least 1 meter in thickness and 300 km² (116 mi²) in areal extent) within the Green River Basin. Identified in ascending order, the trona beds are numbered 1 through 25 from the oldest (stratigraphically lowest) to the youngest (stratigraphically highest), as shown in Figure 3.1. OCI Wyoming has mineable reserves in the shallowest mechanically minable Trona Beds 24 and 25 (nominally 800 and 850 ft. deep). Currently FMC, Solvay, and Tata are mining Bed 17 occurring at greater depth.

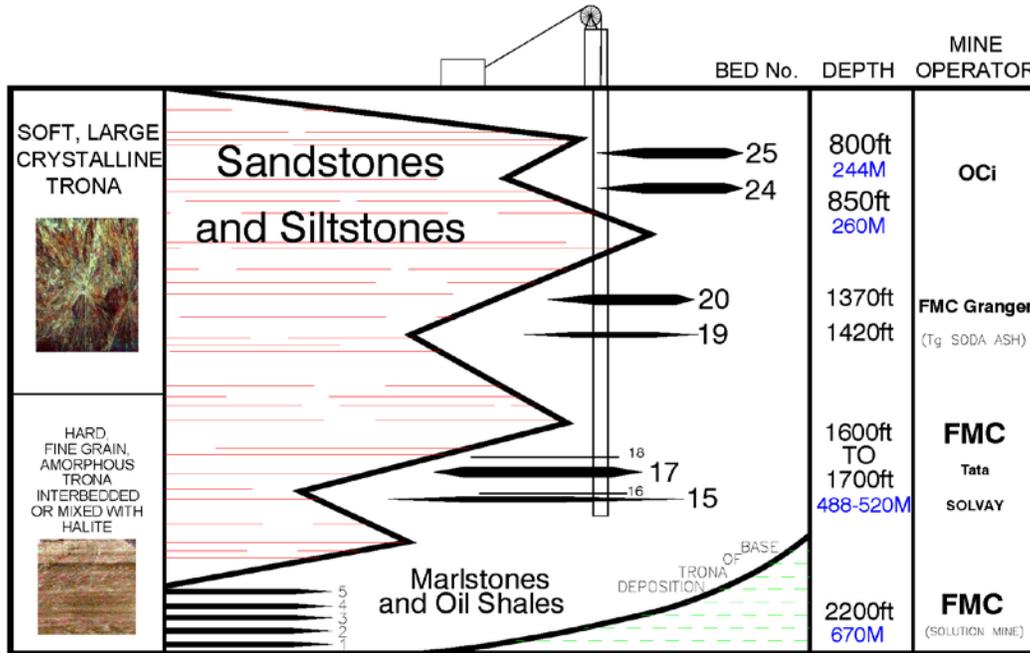


Figure 3.1 Schematic Section Through the Trona Deposits

Trona Beds 1 through 18 of the Lower Wilkins Peak are relatively tabular with a fine grain sugary appearance. Various amounts of halite (salt) are present and can become more salt than trona towards the southwestern portion of the depositional basin. Halite is a major contaminate in the refining process and reduces recovery and increases production cost. A stable depositional environment is implied by uniformity and minimal variation of the depocenters of Beds 1 through 18.

Trona Beds 19 through 25 are relatively halite free and consist of amber translucent coarse-crystalline blades to coarse granular “sugary” textured masses. Trona Beds 19 through 22 are located in the northwestern corner of the Green River Basin saline depositional basin. Trona Beds 24 and 25, mined by OCI Wyoming, are located in the northeastern corner.

Figure 3.2 shows the areal extent of the major trona beds in the Green River Basin.

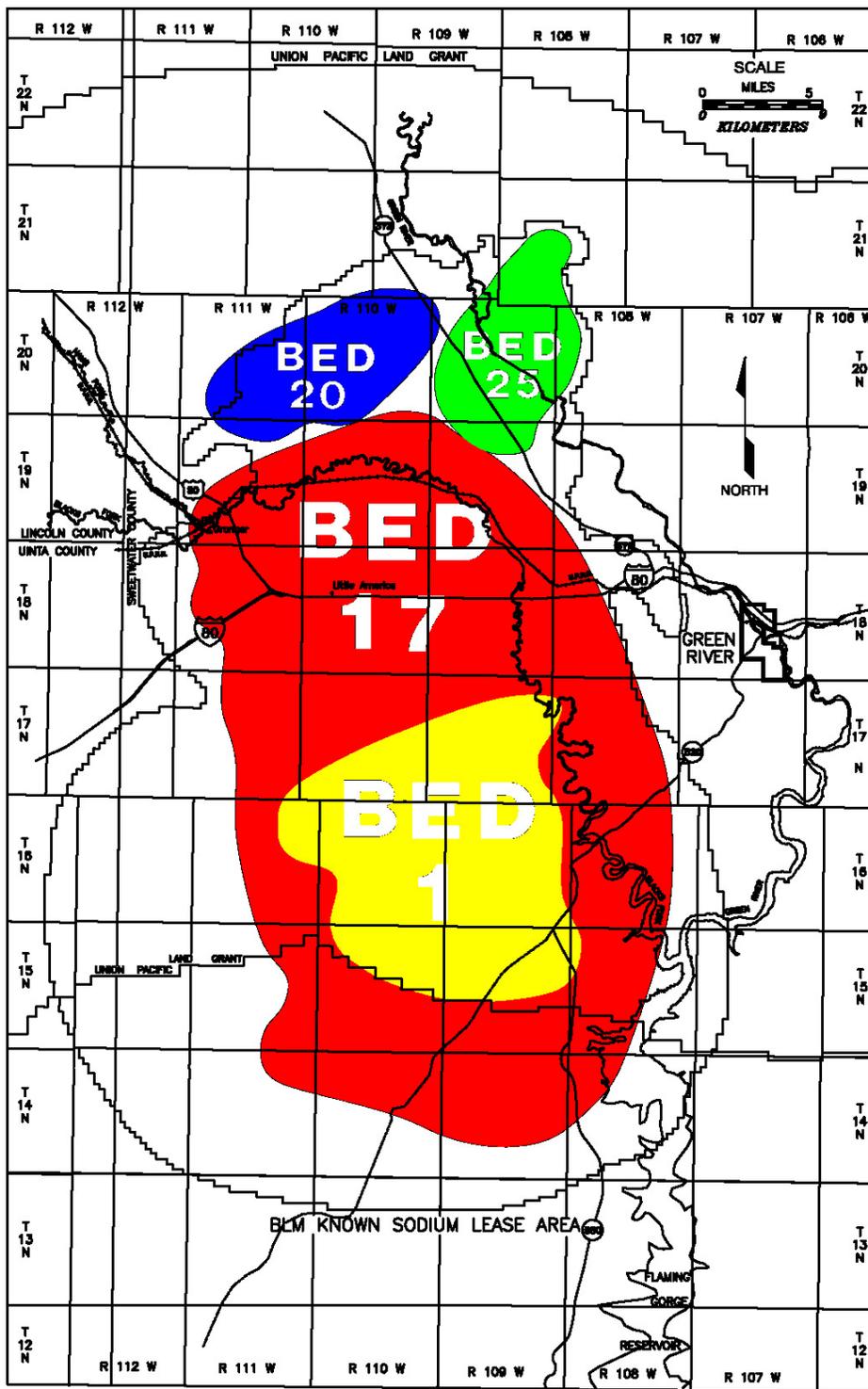


Figure 3.2 Green River Basin Trona Bed Extents

Mineral reserves within the OCI Wyoming lease area are confined to Trona Beds 24 and 25. Isotope analysis of a volcanic layer, known as the Big Island Tuff, located between these beds, has dated deposition at approximately 49 million years. Local structural dip is oriented west/southwest at a grade of approximately 50 feet per mile and was influenced by the structural high of the Rock Springs Uplift to the east, as shown on Figure 3.3. Overburden depths of Beds 24 and 25 increases along the strike of the dip from typically 800 feet to 1100 feet with increasing surface topography. Figure 3.3 shows a generalized east-west cross section across the Big Island Mine property.

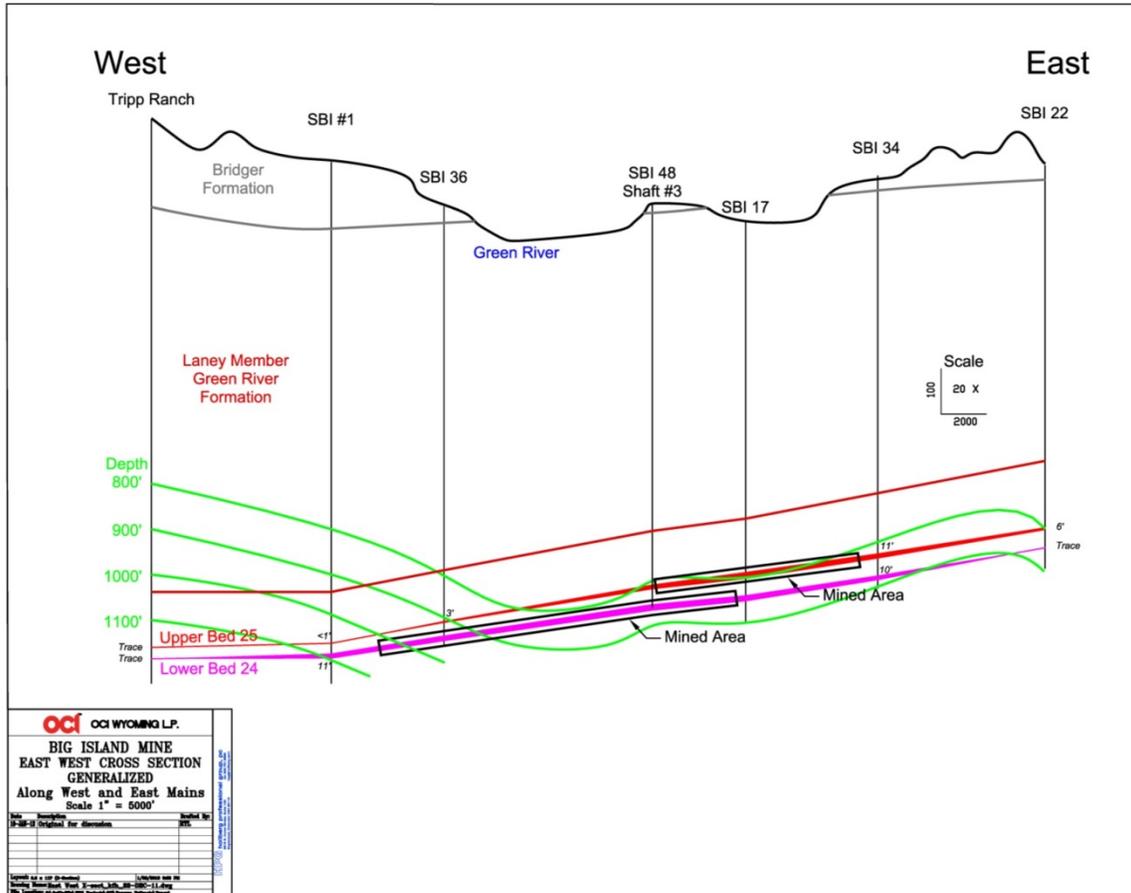


Figure 3.3 Generalized Cross Section

3.3.4 Socioeconomics

Soda ash production from the Green River basin contributes substantially to the gross domestic economy due to the diverse uses of soda ash.

The US soda ash currently supplies approximately one-fifth of the global demand for soda ash as well as 90 percent of the US soda ash needs. Soda ash is the US's largest inorganic chemical export. The total value of production for the US industry was nearly \$1.8 billion in 2013 (US Geological Survey). The industry exported approximately 6.7 million tonnes of soda ash in 2013, which is approximately 56% of total production. Soda ash production positively contributes nearly \$1 billion annually to the US's balance of trade, as well as considerable funds to the federal and state governments via royalties, taxes, and local employment. OCI pays to the federal government an average of approximately \$7 million dollars per year. The federal government splits these royalty payments with the State of Wyoming at a rate of about 50%.

Soda ash production in the Green River Basin provides direct employment of over 2,300 people that supports substantial indirect employment in the area.

4.0 ENVIRONMENTAL CONSEQUENCES

Consistent with 40 CFR 1502.16, this section discusses the potential environmental consequences associated with the Proposed Action and No Action Alternative on each of the affected resources. An environmental impact is defined as a change in the quality or quantity of a resource due to modification of the existing environment due to the new activity. Impacts may be beneficial or adverse, direct or indirect, and may be permanent, long term, or temporary. This impact assessment assumes any applicant-committed measures described in the Proposed Action would be successfully implemented.

As determined in Section 3, since the proposed lease modification to include addition of Section 34 will only impact underground mine activities, the affected resources considered for Environmental Consequences are Air Quality, Climate and Greenhouse Gases, Cultural, Geology and Mineral Resources, and Socioeconomic.

4.1 AIR QUALITY, CLIMATE, AND GREENHOUSE GASES (GHG)

Alternative I – No Action Alternative

Under the No Action Alternative, the Proposed Action would not be implemented and no additional impacts to air quality, climate, and greenhouse gasses, other than those already authorized in the project area would occur. Air quality impacts would not be expected to change from current conditions.

Alternative II – Proposed Action

The proposed action would not require any additional surface facilities for mining or processing. All mining and processing will be done by the existing OCI infrastructure.

Air emissions and air pollutant impacts are limited by state and federal regulations, standards, and implementation plans established under the Clean Air Act as administered within the State of Wyoming by WDEQ-AQD. Since the addition of Section 34 will only involve underground operations, no additional surface disturbance or construction activity would result from the Proposed Action; therefore, it is not expected that additional WDEQ-AQD construction and operating permits would be required.

The addition of Section 34 to the overall mine plan will not create an increase in the annual emissions, but will extend the emissions period for the anticipated additional 4-year mine life.

Under the Proposed Action the average metric tons of CO₂e that would be produced each year, over the life of the project equates to much less than 1% of the current total yearly CO₂e emissions throughout the world, which was estimated to be 49 Gigatons (Gt) CO₂e in 2010 (UNEP 2012).

While the impact on global CO₂e emissions from the proposal is rather miniscule, impacts to global climate as a result of greenhouse gas emissions are best viewed in light of their cumulative impacts, on a global scale. Many natural processes and human activities contribute to global CO₂e emissions, including, but not limited to: energy development, motor vehicle use, industry processes, plant and animal cellular processes, and soil decomposition.

As countries around the world become more industrialized, and as economic growth occurs within developed countries, more greenhouse gas sources are created. Advances in technology could allow for industrial and economic growth, while minimizing the release of greenhouse gasses. However, existing infrastructure, and economic barriers may limit the implementation of some of these technologies.

4.2 CULTURAL RESOURCES

Alternative I – No Action Alternative

Under the No Action Alternative, the Proposed Action would not be implemented and no additional impacts to cultural resources other than those already authorized in the project area would occur.

Alternative II – Proposed Action

Pursuant to the Wyoming State Protocol Section IV.C.1., BLM has determined that this undertaking qualifies for a Class III Exclusion due to previous adequate inventory. A block inventory covering the entire section was conducted by Brigham Young University in 1994. No cultural resources will be affected as a result of this project. Section 34 would be mined by underground mining methods which have no resultant surface subsidence and therefore no effect on any surface cultural resources, known, or unknown.

4.3 GEOLOGY, GEOLOGIC HAZARDS, AND MINERAL RESOURCES

Alternative I – No Action Alternative

Under the No Action Alternative, the Proposed Action would not be implemented and no additional impacts to geology, geologic hazards, or mineral resources other than those already authorized in the project area would occur. There is no potential for geologic hazards due to subsidence since the trona resources identified in the proposed action would not be mined.

The No Action Alternative could prohibit and or delay future development of trona resources in Section 34 and adjacent land sections, resulting in the potential bypass of federal and private sodium reserves. Trona Beds 24 and Bed 25 are spatially separated from the other trona beds that are currently being mined in the KSLA. OCI's current lease holdings encompass the majority of these two trona beds. Access to the Section 34 sodium resource from one of the other operations is not viable due to distance and depth. The only alternative access would be construction of new shafts or slopes from the surface. There is no competitive interest in Section 34 based upon

the level of investment that would be necessary to gain access to these sodium resources from another operation other than OCI's Big Island Mine.

Alternative II – Proposed Action

The primary impact to geology, geologic hazards, or mineral resources resulting from implementation of the Proposed Action would be the mining and removal of the in-place federal trona resources. The trona mining of the additional 640 acres within the lease modification is expected to extend soda ash production for approximately four years.

The planned underground mining with no subsidence will have no impact on surface geologic structures. There will be specific underground geology considerations for the underground mine development of Section 34 consistent with the general conditions of Bed 24 and Bed 25 historical mining.

Approval of this project would result in the trona resource not being available for future recovery by other individuals.

4.4 SOCIOECONOMIC

Alternative I – No Action Alternative

Under the No Action Alternative, the projected additional four-year mine life through the development of Section 34 will not occur resulting in reduced employment, tax revenues, and royalties to the local and national economies. OCI is currently mining the trona resource in the southern portion of Bed 25 adjacent to Section 34. Under the no action alternative, OCI would bypass the trona resource located in Section 34 and mine the sections to the east and west. Once these areas are mined, OCI would pull its infrastructure from these areas and move its focus to the northwestern resource areas. These actions would delay future development of trona resources in Section 34, resulting in the potential bypass of federal and private sodium reserves.

Alternative II – Proposed Action

The extended soda ash production produced from the Section 34 trona resource will support continued direct and indirect employment by increasing the mine life and would serve the need for soda ash, while providing tax revenues, and royalties for the local and national economies. Royalty payments would total an estimated \$70 million as calculated from the current federal royalty rate of 4% of gross value.

The additional mine life projected with the acquisition of Section 34 sodium lease modification will have a positive impact on the regional economic development plan supported by the Sweetwater County Commissioners (reference letter from County Commissioner Chairman to BLM Mining Engineer, Appendix 1.0).

4.5 CUMULATIVE AND RESIDUAL EFFECTS

Alternative I – No Action Alternative

Under the No Action Alternative, there are no cumulative or residual effects greater than those already authorized in the project area.

Alternative II – Proposed Action

It is not anticipated that approval of this proposal will create any cumulative effects in conjunction with any other past, present, or reasonably foreseeable future projects.

Cumulative and residual effects from the 640 acres of federal sodium lease modification in Section 34 would not be greater than those identified and analyzed in the GRRMP Final EIS (1997 GRRMP).

4.6 MITIGATION MEASURES CONSIDERED

No mitigation measures were found to be necessary.

5.0 LIST OF PREPARERS

The Environmental Assessment has been prepared by the BLM RSFO staff, in conjunction with the Office of Surface Mining.

The RSFO ID Team consisted of the following individuals:

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Reviewer:

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Date

6.0 REFERENCES

Western Archaeological Services, Rock Springs, Wyoming. Cultural and Historic Resources Data Overview for the OCI Section 34, T20N, R109W Project 13-WAS-053. March 15, 2013.

UNEP 2012. The Emissions Gap Report 2012. United Nations Environment Programme (UNEP), Nairobi

**APPENDIX 1.0
PUBLIC COMMENTS**

