City of Loveland

DEVELOPMENT SERVICES
CURRENT PLANNING
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# FINAL STATEMENT OF FINDINGS
# Type II Zoning Permit
# Big Thompson Farms Gravel
# Special Review #916

**Posted: May 13, 2016**

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| **TITLE:** | Big Thompson Farms Gravel, Special Review #916 |
| **LOCATION:** | The site is located northwest of the intersection of W. 1st Street and S. Wilson Avenue |
| **APPLICANT:** | Kim Lambrecht, Vireo Planning & Landscape Architecture |
| **STAFF CONTACT:** | Noreen Smyth, Current Planning |
| **APPLICATION TYPE:** | Special Review #916 |
| **STAFF RECOMMENDATION:** | Staff recommends that the Current Planning Manager approve this special review allowing for the gravel extraction operation on the property, subject to the conditions listed in Section VIII of this Report. |

## I. ATTACHMENTS

1. Vicinity Map
2. Applicant's Narrative
3. Special Review/Site Development Plan
4. Noise Study

## II. SITE DATA

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|---|---|
| EXISTING USE | Vacant & Agriculture |
| PROPOSED USE | Gravel Mine |
| EXISTING ZONING | DR-Developing Resource |
| EXISTING LOT AREA……..... | 32.78 acres |
| PROPOSED MINING AREA | 15 acres |
| EXIST. ADJ. ZONING & USE – EAST | I-Developing Industrial / Utility office |
| EXIST. ADJ. ZONING & USE – WEST | R1- Low Density Residential / Agriculture |
| EXIST. ADJ. ZONING & USE – SOUTH | R1 & R2- Residential / Residential |
| EXIST. ADJ. ZONING & USE – NORTH | Larimer Count FA: Farming/Gravel mine |
| UTILITY SERVICE – WATER | City of Loveland |
| UTILITY SERVICE – SEWER | City of Loveland |
| UTILITY SERVICE – ELECTRIC | City of Loveland |

## III. PROJECT DESCRIPTION

The applicant proposes to mine the gravel and sand resources on a 32 acre parcel of land located at the northwest corner of Wilson Avenue and 1st Street. The gravel extraction activity would occur over a 15 acre portion of the site and be in support of the existing concrete processing plant located on the property to the north, within unincorporated Larimer County. The exact commencement date of the mining operation is not known at this time, as the operation on the subject property would start once a nearby mine is depleted. It is anticipated to start within 3-6 years. The duration of the mining activity is dependent on demand, with 5-7 years of extraction predicted to occur before the all commercially viable minerals are removed.

The operation first involves the removal of topsoil, with its storage occurring on-site through its use as fill in an area on the property adjacent to 1st Street that is at a lower elevation than the street, and through the creation of stockpile berms that will surround the mine. The gravel extraction activity then occurs below ground level and largely below the water table, with the gravel removed in a wet state. All of the extracted material is sent to the processing plant on the property to the north that is under the same ownership as the mine. No traffic will go directly from the subject property to the street. All trucks related to the gravel extraction will move directly between the subject property and the plant property, and employees associated with the gravel mine operation will enter the subject property through the processing plant property.

Once the extractable minerals have been depleted, the site will be remediated. The submitted remediation plan returns the property to grassland, although the applicant or any future owners of the

property can pursue future development of the remediated land. Such future development would require either another Special Review application for a use within the DR Developing Resource district, as all uses within the district require a Special Review, or a rezoning application to another zoning district.

For mining activities, the city review relates to zoning matters, and all zoning requirements are anticipated to be met with the proposal. The applicant is concurrently proceeding with certain State of Colorado applications related to mining and environmental matters.

## IV. KEY ISSUES

Key issues associated with this application include visual screening, noise mitigation, and dust control for the gravel extraction operation.

## V. BACKGROUND

The Big Thompson Farms Addition was annexed into the city in 1978 and zoned residential. The subject property consisted of part of Tract A and all of Tract B from that Addition. An amended plat was approved in 2013 moving the line between Tract A and Tract B so that the subject property consisted entirely of Tract B. At that time, a request to rezone Tract B to DR Developing Resource was approved.

## VI. STAFF, APPLICANT, AND NEIGHBORHOOD INTERACTION

**A. Notification:** A letter advertising a neighborhood meeting was sent out by the applicant on September 23, 2015 to all property owners within the required special review notification distance per Table 18.05-1 of the Loveland Municipal Code and two meeting notice signs were posted on the property.

**B. Neighborhood Response:** A neighborhood meeting was held at 6:00 p.m. on October 8, 2015 in the Gertrude Scott Room of the Loveland Public Library. Approximately 60 people were in attendance at the meeting.

**C. Project Schedule**

1. The Special Review/Site Development Plan application (#15-141) was filed with the Current Planning Division on August 7, 2015.

2. A neighborhood meeting was held on October 8, 2015 in the Gertrude Scott Room of the Loveland Public Library.

3. The staff preliminary findings were posted on October 19, 2015.

4. The public review comment period for the staff preliminary findings was from October 20, 2015 through October 28, 2015.

5. Final findings are anticipated to be posted on May 13, 2016, with an accompanying appeal period ending May 23, 2016

## VII. FINDINGS AND ANALYSIS

**Finding 1.** *That the proposed special review use meets the purposes set forth in Section 18.04.010 of the Loveland Municipal Code.*

The proposed development on this site, with the conditions listed in Section VIII of this report, can meet the purposes set forth in Section 18.04.010 of the Loveland Municipal Code. With the noise, dust, and visual mitigation efforts proposed, the use should not create unsafe or unhealthy conditions and should not be detrimental to the welfare of Loveland citizens. While the Comprehensive Plan recommends Low Density Residential land uses for this area, the Plan does not preclude the extraction of minerals from a property in any land use category. The mining use is allowable per the property's DR Developing Resource zoning designation, and the proposal would be consistent with sound planning practices and the provision of current and future public infrastructure requirements.

**Finding 2.** *That the effects of the proposed special review use on the surrounding neighborhood and the public in general will be ameliorated.*

Staff believes that this finding can be met. The proposed use is anticipated to be complementary to the adjacent gravel mine and gravel processing plant to the north, just outside city limits. The close proximity of the proposed gravel mine to the plant will serve to lessen heavy truck traffic on the adjacent public streets, as trucks bringing gravel from the mine to the processing plant will not need to utilize public streets and can instead travel from the mine to the plant on drives that are internal to the properties on which the operation takes place. The mine is not anticipated to have a negative impact on the office/utility use to the east or to the farmland to the west. Because of the distance between the pit and the properties beyond the farmland to the west, on the opposite side of Namaqua Avenue, and because of additional landscaping to be planted along the Namaqua frontage, the properties west of Namaqua are not anticipated to be impacted. The properties to the south, across 1st Street, would face dust impacts from the use if adequate water spraying of the dust-inducing areas of the site and the seeding of the dirt stockpiles did not take place. Those properties would also face excessive noise and visual impacts if the fill, berming, and landscape screening efforts were not enacted. With water spraying, seeding, fill, berming, and landscaping, the effects of the use will be ameliorated.

**Finding 3.** *That in assessing the potential effects of the proposed special review use, at a minimum, the following matters have been considered:*

**3a.** *Type, size, amount, and placement of landscaping;*

The draft landscape plan includes the required Type E bufferyard along both 1st Street and Wilson Avenue. The Type E bufferyard standards include a certain number of

canopy trees, evergreen trees, understory trees, and shrubs based on linear feet of the bufferyard. Within the 1st Street bufferyard, a greater number of evergreen trees has been substituted for some of the shrubs to provide denser visual screening.

The subject property is situated at a lower elevation than the adjacent section of 1st Street. Topsoil that currently sits above the area to be mined will be used to fill in this area north of 1st Street prior to the establishment of the bufferyard to allow for greater screening along that street. A landscaped berm has been included in both bufferyards, which will be situated in front of the approximate 10 ft dirt/grass stockpile berms that result from the excavation activity.

The width of the landscape bufferyard along 1st Street, as measured from the property line, is approximately 100 ft, with an additional 100 ft of width between the bufferyard and the mining pit. The width of the landscape bufferyard along Wilson Avenue varies between 40 ft and 50 ft, with an additional 50 ft to 60 ft of width between the bufferyard and the mining pit. The seeded stockpile berm is located in the areas between the landscape bufferyard and the mining pit. The landscape plan shows future street trees within the rights-of-way, but these are not being planted with the gravel mine bufferyards, and instead are illustrative of street trees to be planted with future development of the property after the mining activity ceases. Both bufferyards meet minimum Type E tree quantities without inclusion of the trees within the rights-of-way.

While normally a bufferyard would be required between a gravel mine and agricultural land, given that the agricultural land to the west and the gravel mine are under common ownership, there is little advantage to installing a bufferyard at the west property line of the gravel mine parcel. In its place, landscape will be installed along the Namaqua Road frontage of the adjacent agricultural property. The landscape will not be a conventional bufferyard like that provided for the 1st Street and Wilson Avenue frontages, but instead will be a combination of trees and shrubs to create a landscaped streetscape at this location. Because of the distance between the gravel pit and Namaqua Road and the overburden stockpile between them, it is not anticipated that the pit will be visible from that street, or that on-site vehicles will be readily seen or heard, and thus dense buffering would be of limited value. Dense visual screening of the adjacent agricultural field may be perceived as less desirable than maintaining a view of the field from Namaqua Avenue.

**3b.** *Height, size, placement, and number of signs;*

No signage is proposed for the subject site besides safety-related signage. Any visitors will enter the site through the adjacent plant on the property to the north, and thus any identification signage for visitors is provided on that property. As that property is within unincorporated Larimer County, the county sign standards are to be met on that site.

**3c.** *Use, location, number, height, size, architectural design, materials, and colors of buildings;*

No buildings are proposed for the site. All indoor activity directly associated with the mine takes place on the adjacent property to the north, where the processing plant is located.

**3d.** *Configuration and placement of vehicular and pedestrian access and circulation;*

Configuration of on-site vehicular circulation will change as the exact location of mining activity changes, but all traffic will go between the mine and the processing plant on the property to the north, without exiting onto public streets. As the new gravel mine is proposed to operate in place of an existing gravel mine on a property to the north that is close to depletion, it is not anticipated that the gravel mine on the subject property will result in increased traffic on public streets adjacent to the processing plant. The processing plant's capacity is not being increased in conjunction with the new mine. No on-site pedestrian walkways are provided, as walking is not encouraged on the site. Sidewalk does not currently exist along Wilson Avenue or 1st Street adjacent to the property, but as pedestrians are not encouraged to pass by the site, it will not be constructed in conjunction with the gravel mine. Instead, the site plan ensures that space is provided for its eventual future construction.

City-owned right-of-way exists along the north property line, between the subject property and the gravel operation to the north, and a trail is intended to be located on it in the future. No date or funding is yet formally designated for the trail, but the applicant has been made aware of the intent to locate a trail here. Should the trail be constructed while the gravel mine on the subject property is still in operation, measures will be enacted at that time to ensure safe interaction between the mining trucks and bicyclists.

**3e.** *Amount and configuration of parking;*

No on-site parking is proposed. All employees will be required to park on the adjacent plant property to the north. While there will be some parking of mining operation vehicles on site, there will be no permanent parking area established, and longer term parking of mining operation vehicles will take place on the plant property to the north.

**3f.** *Amount, placement, and intensity of lighting;*

No lighting is needed or proposed for the mining operation, as all mining activity is to occur during daylight hours.

**3g.** *Hours of operation;*

The hours of operation for the gravel extraction operation will generally be limited to 7:00 am to 7:00 pm Monday through Friday, during daylight hours. The gravel mines on other nearby properties owned by the applicant operated outside these hours during a high demand period for gravel immediately after the flood event of 2013. It is possible that an uncommon situation like another flood event could increase demand on the mine for a short period, during which the applicant may seek to extend the hours or days of operation.

**3h.** *Emissions of noise, dust, fumes, glare and other pollutants.*

Noise and dust are expected emissions from the gravel extraction operation.

The submitted noise study concludes that the noise levels for both scraping and mining activities are within the allowable limitations during daytime hours when the activities will occur. Allowable noise levels are based on the land uses across the street from the subject property. Thus, residential noise limits (55 dBA) are to be met along the south and west property lines while industrial noise limits (75 dBA) are to be met along the east property line.

Compliance with noise limits for the removal of overburden (scraping) is based on the determination that scraping is a construction activity, for which industrial noise limits of 75 dBA apply at all property lines. The removal of overburden is anticipated to take two weeks to complete. The noise study indicates that the scraping activity will result in a noise generation level of 55.8 dBA, which is below allowable 75 dBA construction activity noise level. The predicted noise levels as summarized in the noise study are as follows. It should be noted that 1 dBA is approximately the smallest change in intensity between two sounds that the human ear can distinguish.

**Table 5. Mitigated Scraping and Mining Operation Noise Modeling Results including Noise Limits**

| Properties | Predicted Operational Noise Level (dBA) | | | | | | Noise Limit (dBA) |
|---|---|---|---|---|---|---|---|
| | Western Location | | Southern Location | | Eastern Location | | |
| | Scraping | Mining | Scraping | Mining | Scraping | Mining | |
| Western Properties | 42.6 | 31.6 | 40.6 | 36.2 | 38.8 | 38.0 | 55.0* |
| Southern Properties | 48.8 | 46.0 | 55.8 | 43.1 | 49.4 | 48.3 | 55.0* |
| Eastern Properties | 47.6 | 37.6 | 53.0 | 47.2 | 58.9 | 49.5 | 75.0 |

* - Noise Limit for Construction Grading Permit is 75 dBA

The noise study takes into account the code exception that allows noise levels in daytime hours to exceed the maximum sound limits by up to 10 dB for a period not exceeding 15 minutes in any one hour. Attached is a narrative from the applicant providing a detailed explanation of the anticipated need for this exception.

Little dust is generated from the mining process because the gravel material is wet when extracted as a result of the mine being located below the water table. The haul roads between the mine and the processing plant to the north and the overburden stockpiles prior to seeding will be the main sources of dust. The haul road dust will be mitigated by watering as needed, which is allowed by the Air Pollution Emission standards of the State of Colorado. The state standards related to air pollution are to be met per the state mining and environmental permits to be obtained by the applicant. The overburden stockpiles will be seeded once they are fully established. The seeding will prevent them from being a significant dust source, however, the stockpiles will emit some dust prior to the seeding being established.

**Finding 4.** *Except as may be varied in accordance with this special review permit, the special review site plan conforms to the restrictions and regulations set forth in the Loveland Municipal Code for the zoning district in which the special review use is located.*

The proposed Special Review meets this finding. The proposed use complies with all normal applicable restrictions and regulations set forth in the Developing Resource chapter of the Zoning Code and in the Site Development Performance Standards and Guidelines.

**Finding 5.** *The special review site plan meets the requirements set forth in the Section 16.41 – Adequate Community Services – of the Loveland Municipal code.*

**Transportation:** Staff believes that this finding can be met, due to the following:

- A Traffic Impact Memorandum has been submitted with the proposed Special Review application which demonstrates that the onsite transportation system can adequately serve the permitted mining operation without any impacts to the surrounding public streets and the trip generation from the existing concrete facility will continue to operate at historic rates. All future development applications within this area are required to demonstrate compliance with the Larimer County Urban Area Street Standards (LCUASS) and the Adequate Community Facilities (ACF) Ordinance for transportation. Therefore, this Special Review will not negatively impact traffic in the area.

**Fire:** Staff believes that this finding can be met, due to the following:

- The development site will comply with the requirements in the ACF Ordinance for response distance requirements from the first due Engine Company.
- The proposed development for the excavation of gravel will not negatively impact fire protection for the subject development or surrounding properties.

**Water/Wastewater:**
This development is situated within the City's current service area for both water and wastewater. The parcel does not currently have any water or wastewater service from the City. The Department finds that the Development will be compliant to ACF for the following reasons:

- The proposed development will not negatively impact City water and wastewater

facilities.

- The proposed public facilities and services are adequate and consistent with the City's utility planning and provides for efficient and cost-effective delivery of City water and wastewater service.

**Power:** Staff believes that this finding can be met, due to the following:

- Power believes that this project will have no negative impact on our system.
- This project will comply with the requirements in the ACF Ordinance.

**Stormwater:** Staff believes that this finding can be met, due to the following:

- This special review site plan and the site development plan comply with the Adequate Community Services ordinance outlined in the Loveland Municipal Code, Section 16.41.140.

**Building:** Staff believes that this finding can be met, due to the following:

- The proposed development for excavation for gravel will not negatively impact surrounding properties in regard to the adopted building codes

## VIII. CONDITIONS OF APPROVAL

### Transportation

1. Grading is being shown within the ROW for future West 3rd Street. No grading will be permitted in the ROW without an application for an encroachment permit. Transportation recommends revising your grading plans to remove any disturbance within this ROW.

### Parks and Recreation

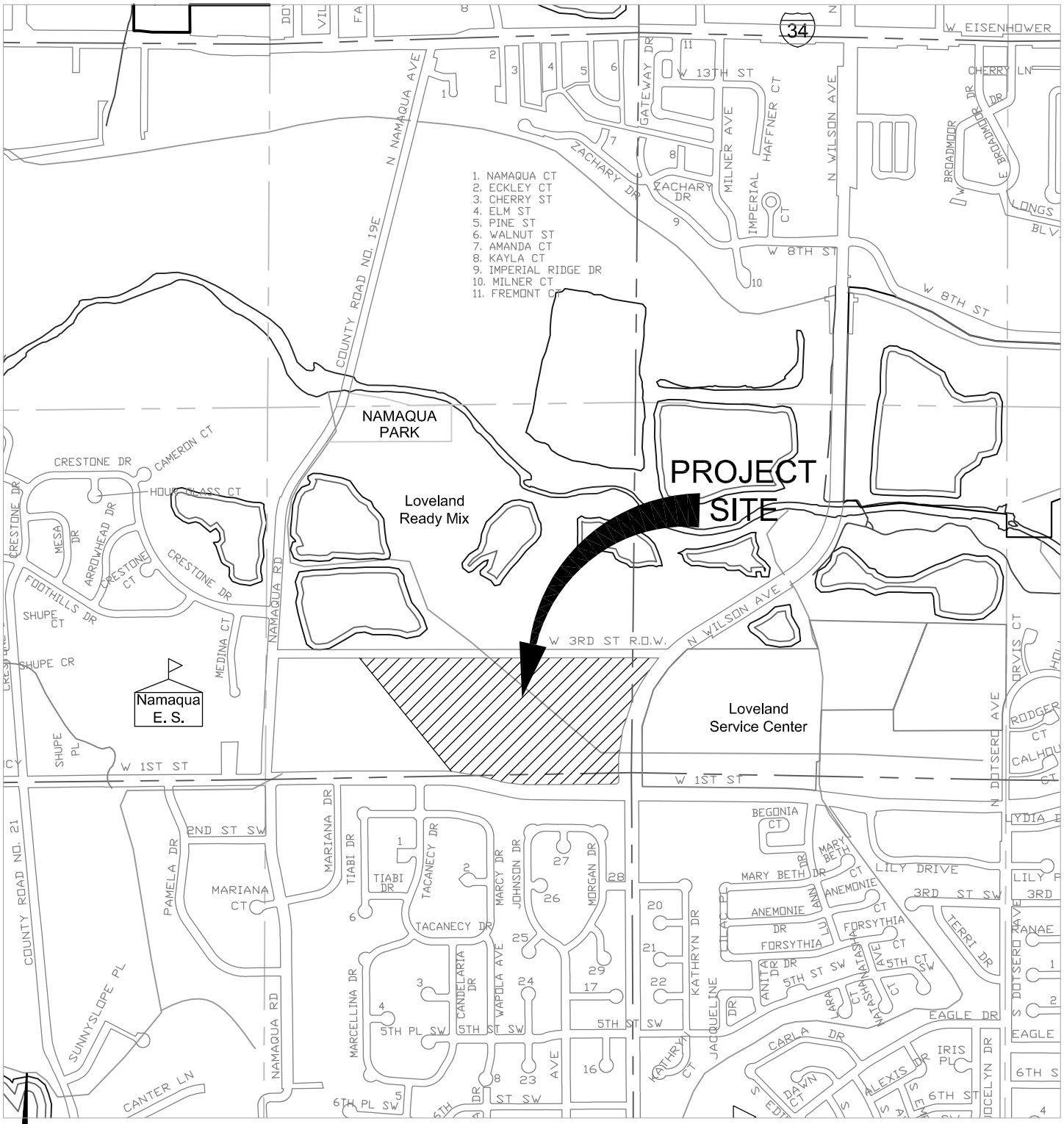
1. Materials shall not be placed in the City right-of-way during construction or reclamation.

### Current Planning

1. Prior to commencement of mining extraction activity, the Developer shall plant all bufferyard landscape as shown on the approved landscape plans.
2. The overburden stockpiles shall be seeded once they are established at their full height. In the event the stockpiles are established at a time of year when weather will necessitate the postponement of seeding, other interim dust mitigation efforts shall be submitted for review and approval to the Current Planning Manager.
3. The applicant is to submit to the city in a timely manner a copy of all plans and applications submitted to, and permits issued by, the state or any other government agency.
4. The applicant shall demonstrate continuing compliance with all state requirements relative to the mining activity, including conformance with Best Management Practices related to grading. The Special Review permit may be revoked by the Current Planning Manager if

compliance with all state requirements is not maintained.

5. Noise:
    a. Prior to commencement of mining extraction activity, a review of the required noise study by a qualified professional, as determined by the city, shall occur to assess validity of the methodology.
    b. The applicant's noise consultant shall conduct readings within the first two weeks of the initiation of mining extraction activity in coordination with the Current Planning office, providing the results to the Current Planning office within one week.
    c. In the event the city receives noise complaints and conducts noise readings which indicate violations to the city's noise ordinance, a noise assessment/mitigation plan will be required. The noise assessment/mitigation plan will be prepared by the city at the applicant's expense. If mitigation measures are needed, an amended Site Development Plan shall be provided in a timely manner by the applicant. If mitigation measures are not enacted to bring the site into compliance with the noise ordinance, the Special Review permit may be revoked.
6. The permitted hours of operation are 7:00 am to 7:00 pm Monday through Friday during daylight hours. In the event of a declared public emergency, the Current Planning Manager may allow the mine to operate outside the hours and days of 7:00 am to 7:00 pm Monday through Friday for a limited period of time. Such a request is to be submitted to the Current Planning Manager for review. The Manager may require additional information for the analysis of such a request, including but not limited to a revised noise study and updated extraction phasing plan. The Manager may approve, approve with conditions, or deny such a request.
7. The Special Review shall commence within six years of its approval date upon approval of a mutually agreed upon development agreement. If the extraction activity does not commence in that time frame, the Special Review is null and void and another Special Review application shall be submitted to the city for review prior to commencement of mining activity.
8. The Special Review is valid for a period of seven years from the commencement of mining activity unless extended by the Current Planning Manager for up to two years. Thereafter, an extension beyond such period requires a major amendment to the Special Review.




# VICINITY MAP

SCALE: 1" = 1000'

July 22, 2015 REV February 12, 2016 REV March 14, 2016

Ms. Noreen Smyth
Current Planning Division, City of Loveland
500 East 3rd Street
Loveland, CO 80537

**RE: Big Thompson Farms – Special Review**
**Project Narrative**

**Project Description:**

The Big Thompson Farms Special Review Application proposes to mine the gravel resources on the 32 acre Tract B parcel of the Amended Plat of the Big Thompson Farms Addition to support the current facilities at the Loveland Ready Mix Concrete Plant, located to the north and adjacent to this property. The property is zoned City of Loveland DR-Developing Resource and is currently used for irrigated crop farming and grazing. Uses permitted by Special Review in a DR District include Farm Use for the raising of crops, and the Extraction of Sand and Gravel for Construction Purposes.

The commercial gravel deposit on this property has been identified on both the City and County master plan for extraction, in accordance with Colorado State Statute 34-1-305 for the Preservation of commercial mineral deposits for extraction.

C.R.S Section 31-1-301 provides that commercial mineral deposits are essential to the State's economy and these deposits should be extracted according to a rational plan that avoids the waste of minerals while at the same time causing the least disruption to the quality of life in the affected area.

Once mining is complete at this site it will be reclaimed and returned to agricultural uses. Mining is not the final use for this property; it is only an interim use. Final uses for the property have not been determined. The current use of farming and the final use of agriculture (pasture/grazing) are compatible with DR permitted uses; complies with State Statutes, and also supports the common pre mining and post mining use of property where sand and gravel resources are located.

The gravel extraction process is expected to begin sometime in the range of 2018-2021. Upon commencing the extraction process, the anticipated duration of the



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operation is 5-7 years. This could vary slightly, depending on the market demand for sand and gravel materials. All operations related to the storage of the topsoil and overburden, extraction of the materials, and transportation of the materials will remain internal to the overall operation between the extraction site and the existing Loveland Ready Mix Concrete Plant – i.e. no incoming or outgoing truck traffic will occur from Tract B onto the adjacent streets. The materials will be moved via internal haul roads that connect directly with the Concrete Plant.

Throughout the course of the extraction process, a total of approximately 15 surface acres are anticipated to be disturbed in order to excavate the sands and gravels. Approximately 3.5 acres will be specifically set aside as landscaped bufferyards, with the remaining 14 acres being used for circulation and overburden storage.

The project will begin with the removal of the overburden material, which will be used to fill the low area along 1st Street, to create the bufferyard landscape berms, and to create the temporary spoils berms that will also serve as temporary screening. This work is anticipated to take 4 to 8 weeks. Any overburden not needed for the initial landscape and screening work will be removed per the phasing described below.

The extraction of the sands and gravels will begin at the northeast corner of the site, and will progress across the site in a westerly fashion. Generally, extraction will occur in approximately 3-4 acre 'north-south' increments, with the previous extracted area being filled in with the overburden material, once the gravel in that 'increment' has been depleted.

Once the extractable sands and gravels have been entirely depleted, the site will be remediated and reclaimed to agriculture uses (pasture/grazing), based on the City of Loveland approved Site Development Plan along with the Reclamation Plan that will be submitted to the State of Colorado Division of Reclamation Mining and Safety (DRMS).

It is important to note that this project will also have extensive review and approval by the DRMS. The DRMS will be reviewing the: pre-mining condition, the proposed mining plan, and the reclamation plan, along with compliance with several other State and Federal regulations (air quality, wildlife evaluation, ground water monitoring,

stormwater management, etc.). Additionally, the DRMS requires that a bond for the estimated costs of all site reclamation be in place prior to issuing a mining permit.

**Project Location:**

The project falls within the City of Loveland city limits, and is generally located on the north side of West First Street, between North Namaqua Road and North Wilson Avenue.

**Adjacent Property Zoning and Uses:**

North: Larimer County FA-Farming / Sand and Gravel Extraction, Loveland Ready Mix Concrete Plant

South: City of Loveland R1 and R2 – Developing Low Density and Two Family Residential / Mariana Glen and Meadowbrook Heights Subdivisions

East: City of Loveland I-Developing Industrial / City of Loveland Service Center

West: City of Loveland R1-Low Density Residential / Vacant

**Project Narrative:**

*a. Type, size, amount and placement of landscaping:* Currently, the site is farmed, with irrigated alfalfa production being the primary use. Past farming uses have included grass, hay, corn and pasture grazing. There is minimal vegetation beyond the crops and native hay grasses as the ground cover beyond the alfalfa over the 32 acres. With this project, a 3 to 4-foot high landscape berm will be placed in intervals along 1st Street and Wilson Avenue. The berms will be located in the DRMS required 100' buffer zone, adjacent to the right-of-way. These berms are anticipated to be permanent in nature, and will be planted with a mix of coniferous and deciduous trees, along with a drought tolerant native seed mix that will be permanently irrigated to maintain the established ground cover and plant material. The berms will serve to provide the requisite amount of bufferyard plantings along 1st Street and Wilson Avenue, and will be installed using the overburden material that will be scraped from the site prior to the mining activity beginning.

Additionally, minimal bufferyard plantings will be installed along Namaqua Road, in lieu of a bufferyard planting along the west property line of Tract B. The Applicant feels that plant material along the property line will not serve to mitigate noise or visual impacts, and may limit how mining activity occurs on Tract B. Additionally; the existing

farming activity will be better able to continue without the internal plant material. Locating that buffer along Namaqua Road will serve these conditions favorably.

Refer to the proposed 1st Street and Wilson Avenue bufferyard installation charts below.

**Bufferyard** – Type **'E'** is assumed for 1st Street:

| **Standard Specification / 100 LF** | **Width of Buffer** | **Plant Multiplier** | **Length of Bufferyard** | **# of Plants** |
|---|---|---|---|---|
| *Bufferyard Type E* | | *50' width* | | |
| 5 Canopy Trees<br>6 Understory Trees<br>30 Shrubs*<br>4 Evergreen/Conifer | +50' width = | 0.50 | **1st Street = 1208'** | 31<br>37<br>182<br>25 |

*Note: Some evergreen trees will be substituted for some of the shrubs along 1st Street to provide a better visual barrier.

**Bufferyard** – Type **'E'** is assumed for Wilson Avenue:

| **Standard Specification / 100 LF** | **Width of Buffer** | **Plant Multiplier** | **Length of Bufferyard** | **# of Plants** |
|---|---|---|---|---|
| *Bufferyard Type E* | | *50' width* | | |
| 5 Canopy Trees<br>6 Understory Trees<br>30 Shrubs*<br>4 Evergreen/Conifer | +50' width = | 0.50 | **Wilson Avenue = 900'** | 23<br>27<br>135<br>18 |

*Note: Some evergreen trees will be substituted for some of the shrubs along 1st Street to provide a better visual barrier.

The permanent drought tolerant, native seed mix proposed for the buffer yards and permanent site berms is as follows: "Foothills Native Grass Mix" (Applewood Seed Co.) consisting of the following grasses in equal proportions: Blue Wildrye, Slender Wheatgrass, Blue Grama, Little Bluestem, Indian Ricegrass, Sandberg Bluegrass, Prairie Junegrass, Green Needlegrass, and Needle-and-Thread planted at a minimum rate of 9 lbs/acres by hydroseed application.

As part of the relocation of the overburden soil material, additional 7' - 10' high temporary berms will be placed along the south and east property boundaries. These berms are intended to serve as visual and sound barriers for the residential properties located to the south and southwest along 1st Street. These berms will be hydro-seeded with a drought tolerant seed mix as soon as is practically possible, once they are installed and graded to a 'final' condition. The side-slopes of the berms are anticipated to be 3:1, a manageable slope for plant growth. The berms will be hand-watered to establish the growth of the seed mix. Because these berms are temporary in nature, they are not intended to have any additional plant material as the overburden material will be relocated back into the excavation pit during the reclamation process.

During the course of the operation of the gravel pit, no additional plant material (beyond the required bufferyards) is proposed at this time. The ultimate landscape condition of the site, once the gravel extraction is completed, will be installed as a part of the proposed reclamation plan that will return the site back to suitable agricultural uses.

Note that the street trees shown along Wilson Avenue and First Street are shown for informational purposes only. They have NOT been included in the bufferyard plant counts, and are not intended to serve as elements of the bufferyard. The bufferyard design complies with the intent of the Code as a standalone element, not reliant upon the number of street trees shown. The street trees are planned to be installed at such time that a site specific 'final' development is proposed for this location. (The mining and reclamation uses are temporary, and serve only as a transition to a more permanent future use.)

Additional temporary/transitional berming may also be placed along the north and west sides of the extraction pit during the mining process. This berming will also serve as a visual barrier, but may change over the course of the extraction, as overburden materials are shifted to allow for excavation of gravels and equipment circulation. These temporary berms will be removed and used to 'fill in' the excavation pit as excavation moves to the west, and the pit has been depleted of the gravels. Any stockpiles assembled along the northern property will remain clear of the City's right-of-way and sewer line.

As with the berms along the south and east sides, these north and west temporary berms will be hydro-seeded with a drought tolerant seed that will be hand watered. The seed mix for the temporary (overburden) berms is as follows:

| Common Name | Scientific Name | % of Mix | Cool/Warm | Ht (ft) |
|---|---|---|---|---|
| Western Wheatgrass | Pascopyrum smithii | 10 | Cool | 1.5-3' |
| Intermediate Wheatgrass | Elytrigia intermedia | 10 | Cool | 2-4' |
| Russian Wildrye | Psathyrostachys juncea | 10 | Cool | 1.5-3' |
| Siberian Wheatgrass | Agropyron sibircum | 10 | Cool | 1.5-3' |
| Slender Wheatgrass | Elymus trachycalus | 60 | Cool | 1-3' |

Additionally, the existing 3-strand barbed wire 'rural-style' fence will remain along the Wilson Avenue, First Street and Namaqua Road property lines. This existing fencing is intended to serve as a 'passive' barrier intended to reinforce the 'rural' nature of the site, as well as discourage entrance to the site.

*b. Height, size, placement and number of signs:* No 'monument' style, or other types of site identification signs will be added to the site. The site will be posted with the appropriate 'safety' and 'no trespassing' signage.

*c. Use, location, number, height, size, architectural design, exterior materials and color of buildings:* No buildings will be added to this site as a result of the operation.

*d. Configuration and placement of vehicular and pedestrian access and circulation:* Currently, there are no vehicular access points onto the site from public rights-of-way, nor are there any existing sidewalks along Wilson Avenue and 1st Street. All vehicular and truck traffic will occur internal to the mining site, between the extraction pit and the existing concrete plant, via 'haul roads'. The main haul road between the extraction pit and the concrete plant will be defined. All other truck circulation will occur throughout Tract B, based on the specific location of the gravel extraction area. During the operation of the extraction process, no public pedestrian activity will be recommended or encouraged within the boundary of the property or along the property lines for safety reasons, thus no sidewalks will be proposed as a part of the Special Review. This is also proposed to discourage pedestrians from crossing over to the mining property. Once the site has been mined and all industrial activity has ceased, the site will be remediated and reclaimed back to an acceptable agricultural use.

*e. Amount and configuration of parking:* No general vehicular parking will occur on the site. However, heavy equipment directly related to the mining operation may be left on site once operations cease for the day. Employees will park at the existing Loveland Ready Mix plant. There are currently 30 employee parking spaces for 27 employees. (There are also (4) visitor parking spaces.) No additional employees are proposed to be added as a result of this project.

*f. Amount, placement and intensity of lighting:* No site lighting will be used. However, equipment and vehicles related to the mining operation will have lights as required by the proper regulatory agencies.

*g. Hours of operation:* The gravel extraction operation will occur during 'daytime' business hours – Monday through Friday, ranging from 7:00 am until 7:00 pm. This falls within the acceptable range as outlined in the State Permitting process.

*h. Emission of noise, dust, fumes, glare and other pollutants:* The three key factors to be considered will be noise, dust and stormwater management. No glare is anticipated with this project. Nor are any other pollutants beyond a typical construction operation anticipated.

Noise will be generated by the trucks during scraping and stock piling of the overburden; during the extraction of the gravels; as well as in the transportation of the materials to the concrete plant. It should be noted that these operations will not be a continuous ongoing operation. The material mined in approximately one day's operation allows the concrete plant to operate for several days. Thus, the actual mining in the pit will most likely only occur one or two days a week. This is not anticipated to be in excess of what currently occurs at the gravel pits to the north of this site, nor beyond that which would occur on a typical construction site. An analysis of the noise generated by the trucks (operation of the vehicle, extraction of the gravel, and back-up beepers) is included, and is based on industry standards for the distances noise travels and OSHA requirements for the safe operation of the vehicles and the employees. The key factors to be considered, with respect to noise, are the existing background noise generated by traffic on 1st Street and Wilson Avenue; the intensity of the noise during the initial removal of the overburden at the start of the operation; the distance from the actual operation of the extraction process to the buildings of the

adjacent properties to the south and the east; and the addition of mitigation efforts such as berms and removal of the overburden to lower the activity area. When the required 100-foot offset from the right-of-way to the actual mining operation is considered, and the additional 100' of buffer added along 1st Street is factored in, the distance from the actual extraction process to the nearest residences to the south is well in excess of 350-feet. The distance between the mining operation and the Loveland Service Center is also in excess of 250-feet. This, along with the addition of berms, approximately 10 feet high around the perimeter of the work area, will serve to be mitigation efforts for the project. See the attached noise report, which contains an analysis of the noise conditions.

In summary, the noise study showed that the noise levels created by the ***conditions as they exist today*** fall within the range allowed by the City of Loveland Code along the east and west project boundaries. Additionally, noise generated by operating equipment for the scraping (removal of overburden) and mining will **not** exceed the levels allowed by the Code for the east and west boundaries, in an ***unmitigated condition***. In a **mitigated condition** *(an 8-foot lowering of the operation due to the removal of the overburden)* the noise levels were further reduced. Thus, for the purposes of this narrative, noise created along east and west boundaries is assumed to be a non-issue.

However, the conditions along the south project boundary present some unique challenges. The ***noise conditions, as they exist today***, slightly exceeded the levels established by the Code on the south project boundary – without the mining operation.

The most significant negative condition created by this project occurs during the removal of the overburden material, where the scraping operation exceeded the allowed noise level by 2.8 dBA in an ***unmitigated condition***. In a **mitigated condition** *(an 8-foot lowering of the operation due to the removal of the overburden)*, that excess noise level only exceeded the allowed level by 0.8 dBA, which is equivalent to the ***existing conditions*** at the south project boundary. The duration of the scraping activity is expected to last approximately one or two weeks, at which time the mining site area will be lowered enough to create the mitigated condition.

During the actual mining operation, noise levels very slightly exceeded the allowed noise levels in an ***unmitigated condition***. With a **mitigated condition** (as noted above), the noise level during the mining operation falls well below the allowed level.

It is important to note that the results of the noise study, for the mitigated condition, were based on a conservative model, with the bufferyard berms and planting assumed at a lower elevation that what is being proposed. Use of the overburden material to fill the low areas of the bufferyard, and build up the landscape berms to a level closer to the elevation of 1st Street will help mitigate sound to a higher degree than assumed in the noise study.

Based on feedback received during recent neighborhood meetings, the generation of dust is also a concern. There is very little dust generated from the actual mining process since the sand and gravel materials come from a level that is below groundwater and as such are typically wet when mined. The haul roads and the stockpile berms are the key generators of dust. As is currently the process at other mine locations, this will be mitigated by watering as needed, which is allowed for in the State of Colorado Air Pollution Emission Notice (APEN) document. Additionally, seeding with drought tolerant ground cover will occur over the exposed overburden that is being stored on-site during the operation. Air quality will remain in compliance with State and Federal Standards (as also outlined in the APEN document), and is not anticipated to vary much from the dust level created during farming season.

Stormwater management will include vegetative cover, surface roughening, and the use of the pit itself as a detention pond, to prevent site generated materials from flowing to the river. Due to the high ground water condition present at the site, it will be necessary to dewater the mining pit, and return this ground water into the river. Loveland Ready Mix will pump their dewatering discharge into an existing open mine cell, where the water will naturally be absorbed and return to the groundwater system.

Loveland Ready Mix's Stormwater Management Plan has been included with this submittal. Additional information related to the operation, and remediation can be found in the supplemental drawings, documents and reports included with this Application.

**Reclamation Plan:**

The extraction of sand and gravel is only an interim use for this site. Once sands and gravels have been depleted, the Reclamation Plan (as previously described) will be implemented. The Reclamation Plan is a part of the required DRMS Application. Loveland Ready Mix will be required to post a bond with the DRMS to insure the Reclamation Plan will be implemented. This plan is intended to return the site back to a suitable condition for agricultural uses. The reclamation process will include relocating any overburden material taken from the original excavation back to the pit site, installation of a lining material (to be the overburden) to prevent the infiltration of ground water into the excavation depression (this depression will be dry – no pond is planned to be created with this reclamation plan), spreading the topsoil back over the excavation area, and seeding with a drought tolerant native seed mix.

**Special Request:**

While every effort will be made to implement the plan within the time frame allotted by the Development Code, the dependency on the market conditions as related to the need for sands and gravels may dictate that the extraction of the materials may not occur per the schedule outlined in this Application. As such, the Applicant respectfully requests that approval of this Special Review Permit be extended for a period of **6 years** from the date of approval, to allow for any delays that may occur in beginning the extraction process.

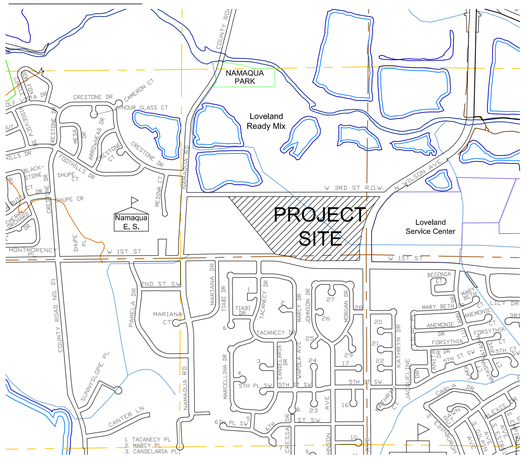
# BIG THOMPSON FARMS GRAVEL MINE

## SPECIAL REVIEW #916 and SITE DEVELOPMENT PLAN

TRACT B, AMENDED PLAT OF BIG THOMPSON FARMS ADDITION, LOCATED IN THE SOUTHEAST QUARTER OF SECTION 16 AND THE SOUTHWEST QUARTER OF SECTION 15, TOWNSHIP 5 NORTH, RANGE 69 WEST OF THE 6TH P.M., CITY OF LOVELAND, LARIMER COUNTY, COLORADO.

(2815 West 1st Street)

## VICINITY MAP




## PROJECT DESCRIPTION

This project proposes to mine the extractable gravels located at Tract B of the Amended Plat of the Big Thompson Farms Addition. The mine will encompass a surface area of approximately 15 acres over the 32 acre lot. The remaining site area will be used for internal circulation of the equipment between the existing concrete plant and the gravel pit, and for the required buffers along Wilson Avenue and 1st Street.

The mining operation is anticipated to begin in 2018, and will continue until the sand and gravel deposits are depleted - possibly a 5 - 7 year duration. Mining will begin at the northeast corner of the site, and progress to the west in 3-4 acre increments.

At a maximum, hours of operation will occur Mondays through Fridays, throughout the duration of the mining activity, from the hours of 7:00 am to 7:00 pm.

No site lighting is proposed for the site.

The appropriate permanent landscape bufferyards will be placed along Wilson Avenue and 1st Street, as noted on the Landscape Plan. Additionally, the overburden material will be stockpiled along the perimeter of the mining site, in the form of 10' high temporary berms while the gravel mining is occurring. These stockpiles will be hydro-seeded with a drought tolerant seed mix as soon as practically possible. The stockpiles will then be placed back in the mine area as the gravel resources are depleted.

The permanent bufferyard landscaping, and temporary stockpiles will serve as the visual and noise mitigation efforts.

Dust will be mitigated by erosion control seeding of the stockpile berms placement , as well as ongoing watering of the internal haul roads as required by the State of Colorado regulations.

## LAND USE DATA

| | |
|---|---|
| COMPREHENSIVE PLAN DESIGNATION: | DR - Development Reserve |
| EXISTING ZONING: | DR - Developing Resource |
| EXISTING USE: | Agriculture |
| PROPOSED USE: | Gravel Extraction |
| AREA: | 32.78 ac. |
| FLOODPLAIN: | No |

| | | | |
|---|---|---|---|
| BUILDING COVERAGE: | 0 | | 0% |
| IMPERVIOUS COVERAGE: | 0 | | 0% |
| EXTRACTION AREA: | 653,400 SF | 15 AC | 46% |
| CIRCULATION AREA: | 637,027.8 SF | 14.62 AC | 45% |
| BUFFERYARD AREA: | 137,469 SF | 3.16 AC | 9% |
| TOTAL AREA: | 1,427,896.8 SF | 32.78 AC | 100% |

PARKING: No vehicular or bicycle parking is anticipated or proposed for this site. All employee parking will occur off-site, at the existing ready mix plant, where 30 employee parking spaces are provided for the 27 employees. No additional employees are proposed as a result of this project. Gravel mining equipment will remain on-site during the duration of the mining operation.

Project Site falls under DRMS Permit Number: M 1974-069

## SIGNATURE BLOCKS

PROPERTY OWNER:
The undersigned agree that the real property described in the application for Special Review filed herewith, and as shown on the site plan, shall be subject to the requirements of Chapter 18.40 of the Municipal Code of the City of Loveland, Colorado, and any other ordinances of the City of Loveland thereto. The undersigned also understands that if construction of all improvements is not complete and if the Special Review uses are not established within three years of the date of the approval, or other completions date or dates established in a development agreement approved by the City, the City may take an action to declare the permit and the Special Review Plans abandoned and null and void.

_____

_____

STATE OF COLORADO)
)ss
COUNTY OF LARIMER )

The foregoing agreement was acknowledged before me this _____ day of _____,

20___, by _____.

Witness my hand and official seal.

My commission expires

Notary Public

CURRENT PLANNING MANAGER APPROVAL CERTIFICATE:

This Special Review is approved, subject to all condition set forth hereon, by the Current Planning Manager of the City of Loveland, Larimer County, Colorado, this _____ day of _____, 20___.

_____
Current Planning Manager

## INDEX OF DRAWINGS



## CONDITIONS OF APPROVAL

| REVISIONS | | |
|---|---|---|
| Description | By | Date |
| 8/28/15 CITY COMMENTS RESPONSE | KJL | 2/12/16 |
| 5/7/16 CITY COMMENTS RESPONSE | KJL | 3/14/16 |


Landmark Engineering
Engineers Planners Surveyors Architects Geotechnical
3521 West Eisenhower Blvd., Loveland, Colorado 80537
(970) 667-6286 • Toll Free 1-866-379-6252 • Fax (970) 667-6298
www.landmarkltd.com


DATE: JULY 2015
SCALE: NO SCALE
DRAWN: KJL
CHECKED: ---
APPROVED: ---

CLIENT: LOVELAND READY-MIX

TITLE: BIG THOMPSON FARMS GRAVEL MINE
SPECIAL REVIEW #916 and SITE DEVELOPMENT PLAN
TITLE SHEET

JOB NO.: LQVREA
2F6B57-A1

SHEET 1 OF 6

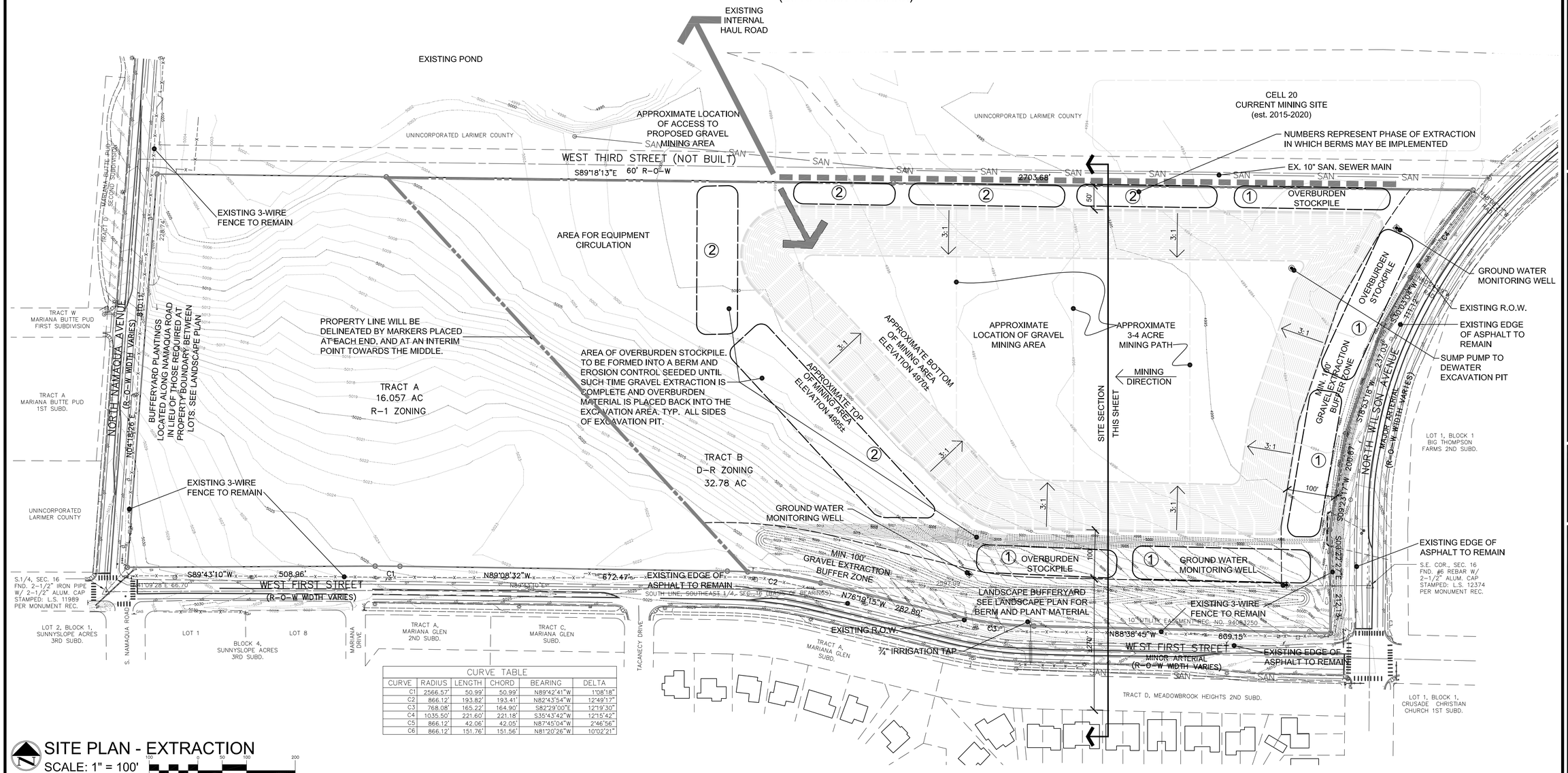

Vireo
Landscape Architecture and Design
Windsor, Colorado 970.460.7203

# BIG THOMPSON FARMS GRAVEL MINE

## SPECIAL REVIEW # 916 and SITE DEVELOPMENT PLAN

TRACT B, AMENDED PLAT OF BIG THOMPSON FARMS ADDITION, LOCATED IN THE SOUTHEAST QUARTER OF SECTION 16 AND THE SOUTHWEST QUARTER OF SECTION 15, TOWNSHIP 5 NORTH, RANGE 69 WEST OF THE 6TH P.M., CITY OF LOVELAND, LARIMER COUNTY, COLORADO.

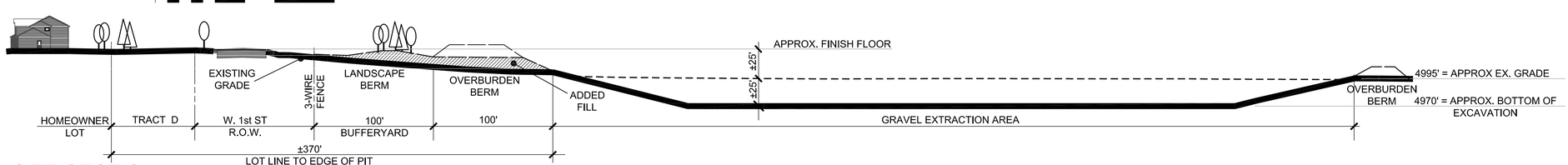
(2815 West 1st Street)




| CURVE TABLE | | | | | |
|---|---|---|---|---|---|
| CURVE | RADIUS | LENGTH | CHORD | BEARING | DELTA |
| C1 | 2566.57' | 50.99' | 50.99' | N89°42'41"W | 1°08'18" |
| C2 | 866.12' | 193.82' | 193.41' | N82°43'54"W | 12°49'17" |
| C3 | 768.08' | 165.22' | 164.90' | S82°29'00"E | 12°19'30" |
| C4 | 1035.50' | 221.60' | 221.18' | S35°43'42"W | 12°15'42" |
| C5 | 866.12' | 42.06' | 42.05' | N87°45'04"W | 2°46'56" |
| C6 | 866.12' | 151.76' | 151.56' | N81°20'26"W | 10°02'21" |

## SITE PLAN - EXTRACTION

SCALE: 1" = 100'




## SITE SECTION

SCALE: 1" = 50' (HORIZONTAL)

| REVISIONS | | |
|---|---|---|
| Description | By | Date |
| 8/28/15 CITY COMMENTS RESPONSE | KJL | 12/2/15 |
| 3/1/16 CITY COMMENTS RESPONSE | KJL | 3/14/16 |

Landmark Engineering
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3521 West Eisenhower Blvd., Loveland, Colorado 80537
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www.landmarkNET.com

DATE: JULY 2015
SCALE: 1"=100'
DRAWN: KJL
CHECKED: ---
APPROVED: ---

CLIENT: LOVELAND READY-MIX

TITLE: BIG THOMPSON FARMS GRAVEL MINE
SPECIAL REVIEW #916 and SITE DEVELOPMENT PLAN
SITE PLAN – EXTRACTION

JOB NO.: LOVREA
2F6B57-A1

SHEET 2 OF 6

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Windsor, Colorado 970.460.7203

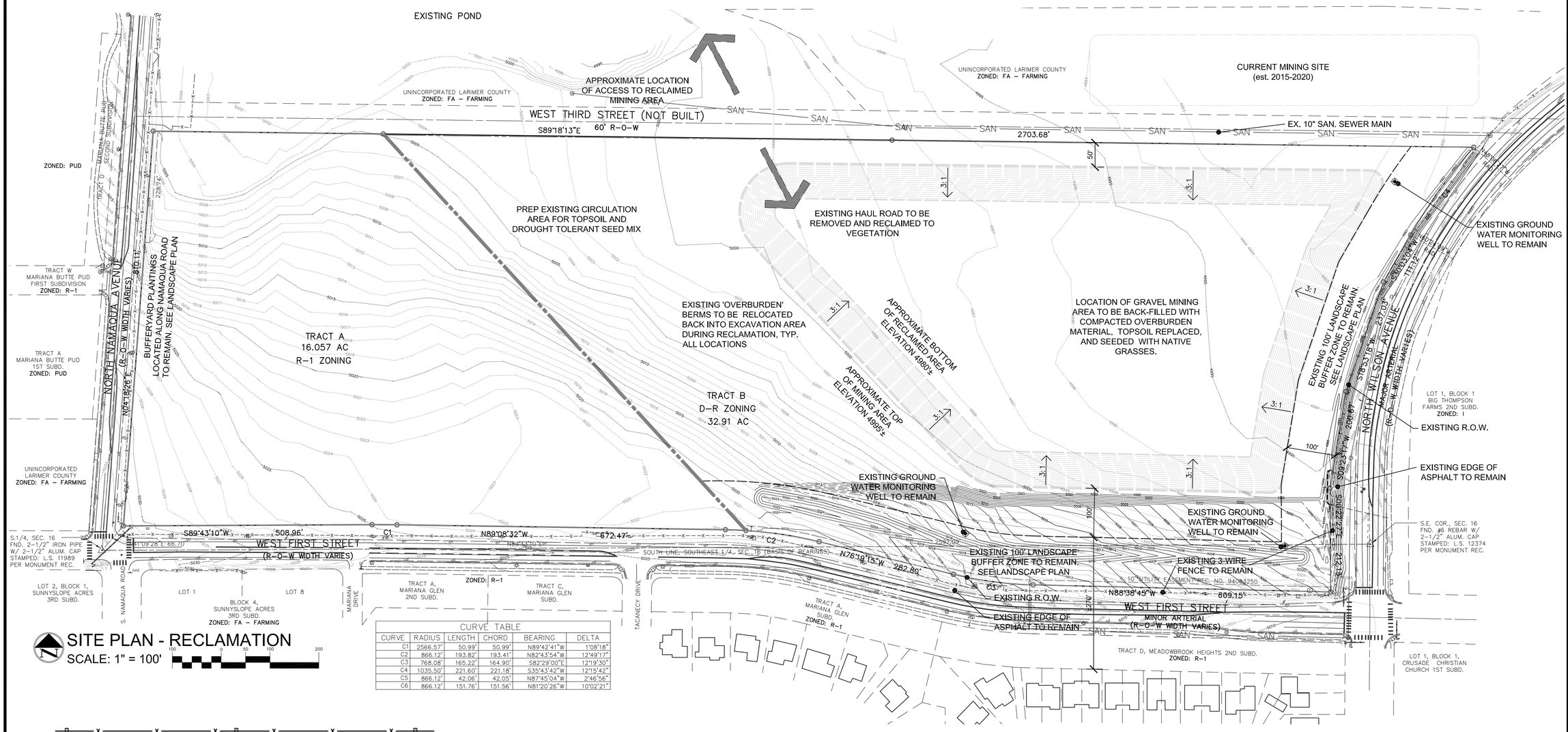


H:\P-14211 Big Thompson Farms\03 Special Review\Drawings\Big Thompson Farm_Special Review_Proposed Plan_REV1.dwg, SITE PLAN-EXTRACTION, 03/10/16 3:25:19PM, klombrecht

# BIG THOMPSON FARMS GRAVEL MINE

## SPECIAL REVIEW #916 and SITE DEVELOPMENT PLAN

TRACT B, AMENDED PLAT OF BIG THOMPSON FARMS ADDITION, LOCATED IN THE SOUTHEAST QUARTER OF SECTION 16 AND THE SOUTHWEST QUARTER OF SECTION 15, TOWNSHIP 5 NORTH, RANGE 69 WEST OF THE 6TH P.M., CITY OF LOVELAND, LARIMER COUNTY, COLORADO.
(2815 West 1st Street)




### SITE PLAN - RECLAMATION
SCALE: 1" = 100'

| CURVE TABLE | | | | | |
|---|---|---|---|---|---|
| CURVE | RADIUS | LENGTH | CHORD | BEARING | DELTA |
| C1 | 2566.57' | 50.99' | 50.99' | N89°42'41"W | 1°08'18" |
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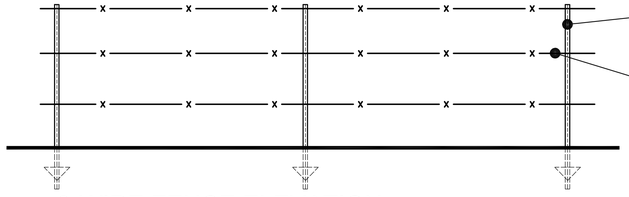


### 3-WIRE FENCE ELEVATION
NO SCALE

NOTE: EXISTING T–POST 7 3–WIRE FENCE TO REMAIN IN PLACE. FENCE WILL BE REPAIRED AND MAINTAINED IN GOOD WORKING ORDER THROUGHOUT THE LIFE OF THE PROJECT.

| REVISIONS | | |
|---|---|---|
| Description | By | Date |
| 8/28/15 CITY COMMENTS RESPONSE | KJL | 2/12/16 |
| 3/1/16 CITY COMMENTS RESPONSE | KJL | 3/14/16 |


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DATE: JUNE 2015
SCALE: 1"=100'
DRAWN: KJL
CHECKED: ---
APPROVED: ---

CLIENT: LOVELAND READY-MIX

TITLE: BIG THOMPSON FARMS GRAVEL MINE
SPECIAL REVIEW #916 and SITE DEVELOPMENT PLAN
RECLAMATION PLAN

JOB NO.: LOVREA
2F6B57–A1

SHEET 3 OF 6


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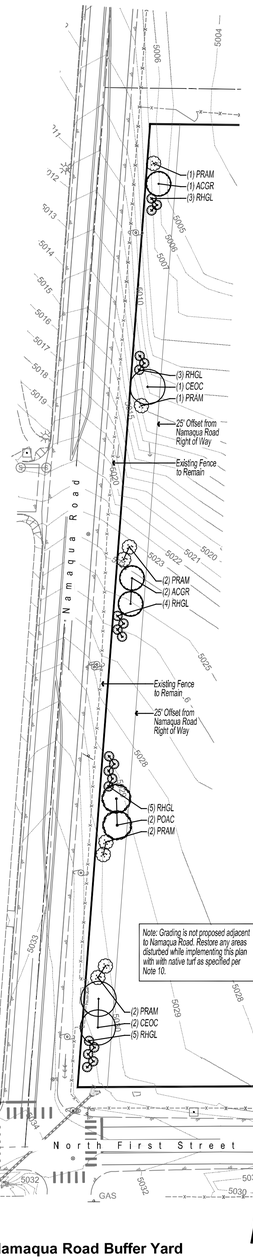
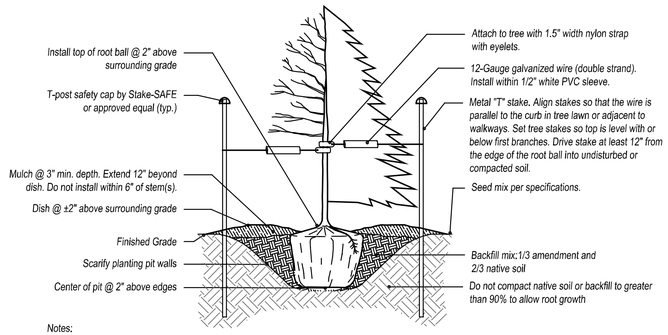


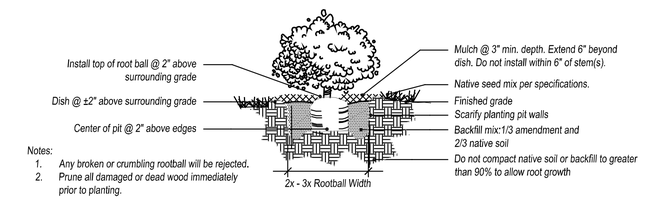

**Namaqua Road Buffer Yard**




Notes:
1. *Do not cut or damage leader. Prune damaged or dead wood immediately prior to planting. Never leave "v" crotches or double leader unless typical of species.*
2. *Cut twine and burlap from around trunk, pull back. Remove all burlap and wire baskets before placing in tree pit. Dispose of burlap and wire baskets legally (do not bury).*
3. *Any broken or crumbling root ball will be rejected. Wire removal will not be an excuse for damaged root balls.*
4. *Stake tree with enough slack so tree can dance.*
5. *Use 2 stakes per tree.*
6. *For winterization wrap entire surface of trunk to second branch with tree wrapping. Secure at 2 foot intervals with vinyl electrical tape. Remove wrapping in May.*

## Tree Planting Detail

NTS




Notes:
1. *Any broken or crumbling rootball will be rejected.*
2. *Prune all damaged or dead wood immediately prior to planting.*

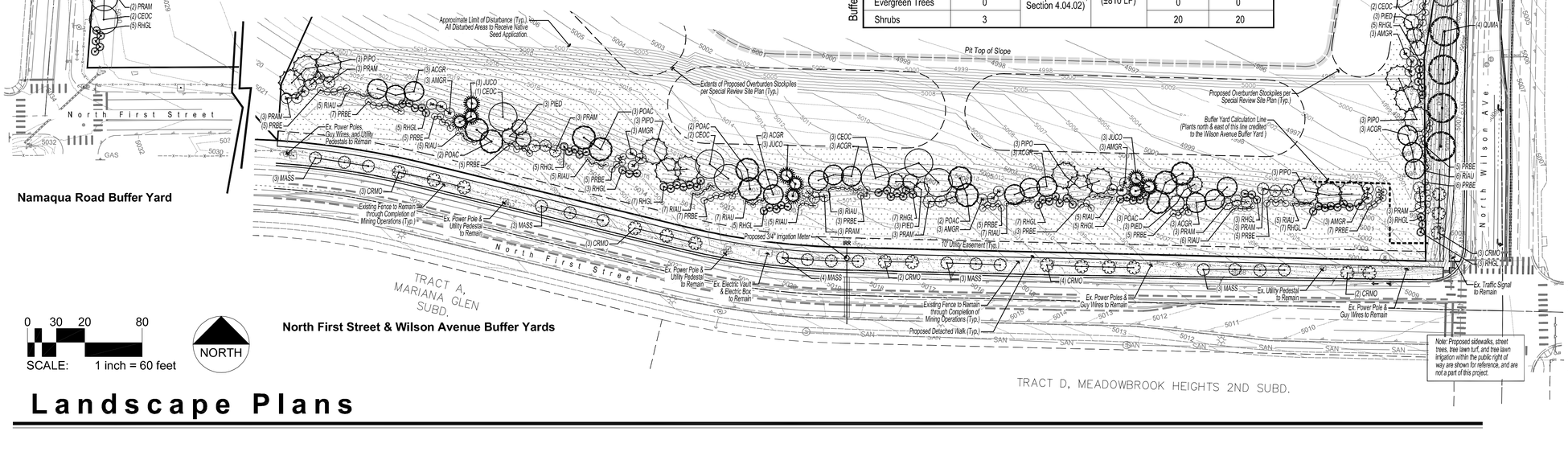
## Shrub Planting Detail

NTS

Hatch Legend

Native Turf (see Notes 8 & 14)

Irrigated Turf (see Notes 9 & 17)




**North First Street & Wilson Avenue Buffer Yards**

0 30 20 80

SCALE: 1 inch = 60 feet

NORTH

# Landscape Plans

## Planting List

| Code | Botanic Name | Common Name | Size / Qty. | Mature Condition | Water Ht. x Spd. | Req. |
|---|---|---|---|---|---|---|
| **OVERSTORY DECIDUOUS TREES (STREET TREES)** | | | | | | |
| GYDI | Gymnocladus dioicus 'Espresso' | Espresso Kentucky Coffeetree | 6 | 2" Cal B+B | 50' x 35' | Very Low |
| QUMA | Quercus macrocarpa | Bur Oak | 10 | 2" Cal B+B | 50' x 40' | Very Low |
| ULMO | Ulmus 'Morton' | Accolade (R) Elm | 6 | 2" Cal B+B | 50' x 40' | Low - Moderate |
| **UNDERSTORY DECIDUOUS TREES (STREET TREES)** | | | | | | |
| CRMO | Crataegus x mordenensis 'Toba' | Toba Hawthorn | 17 | 1.5" B+B | 15' x 15' | Low |
| MASS | Malus x 'Spring Snow' | Spring Snow Crabapple | 17 | 1.5" B+B | 20' x 20' | Low - Moderate |
| **OVERSTORY DECIDUOUS TREES (BUFFER YARD)** | | | | | | |
| ACGR | Acer grandidentatum | Bigtooth Maple | 28 | 2" Cal B+B | 35' x 25' | Very Low |
| CEOC | Celtis occidentalis | Western Hackberry | 16 | 2" Cal B+B | 50' x 50' | Very Low |
| POAC | Populus acuminata x sargentii 'Highland' | Highland Cottonless Cottonwood | 19 | 2" Cal B+B | 50' x 40' | Very Low |
| **UNDERSTORY DECIDUOUS TREES (BUFFER YARD)** | | | | | | |
| AMGR | Amelanchier x grandiflora 'Autumn Brilliance' | Autumn Brilliance Serviceberry | 32 | #15 - Clump | 20' x 10' | Very Low |
| PRAM | Prunus americana | American Plum | 41 | #15 - Clump | 10' x 12' | Very Low |
| **EVERGREEN TREES (BUFFER YARD)** | | | | | | |
| JUCO | Juniperus scopulorum | Rocky Mountain Juniper | 18 | 6' Ht B+B | 20' x 15' | Very Low |
| PIED | Pinus edulis | Pinon Pine | 15 | 6' Ht B+B | 20' x 15' | Very Low |
| PIPO | Pinus ponderosa | Ponderosa Pine | 21 | 6' Ht B+B | 50' x 30' | Very Low |
| **DECIDUOUS SHRUBS (BUFFER YARD)** | | | | | | |
| PRBE | Prunus besseyi | Western Sand Cherry | 60 | #5 Cont | 5' x 5' | Very Low |
| RHGL | Rhus glabra cismontana | Rocky Mountain Sumac | 73 | #5 Cont | 5' x 8' | Very Low |
| RIAU | Ribes aureum 'Gwen's Buffalo' | Gwen's Buffalo Currant | 52 | #5 Cont | 5' x 5' | Very Low |

## Street Trees Required / Provided Calculation

**West First Street**
Required: 31 Trees (1 tree per 40 LF of Street Frontage @ ±1,227 LF)
Provided: 31 Trees (Note: Understory trees were used to remain below existing power lines at maturity)

**North Wilson Avenue**
Required: 25 Trees (1 tree per 40 LF of Street Frontage @ ±981 LF)
Provided: 25 Trees (Note: sanitary sewer line in tree lawn requires trees to be located west of sidewalk)

Namaqua Avenue: N/A

## Buffer Yard Plant Material Required / Provided Calculations

Buffer Yard Type 'E'

North of First Street

| Plant Type | Plants Req'd / 100 LF | Adjustment | 100's of LF | Total Plants Required | Total Plants Provided |
|---|---|---|---|---|---|
| Canopy Trees | 5 | x 0.50 (50' buffer yard width per Table II, Section 4.04.02) | x 12.08 (±1,208 LF) | 31 | 31 |
| Understory Trees | 6 | | | 37 | 39 |
| Evergreen Trees | 4 | | | 25 | 30 |
| Shrubs | 30 | | | 181 | 181 |

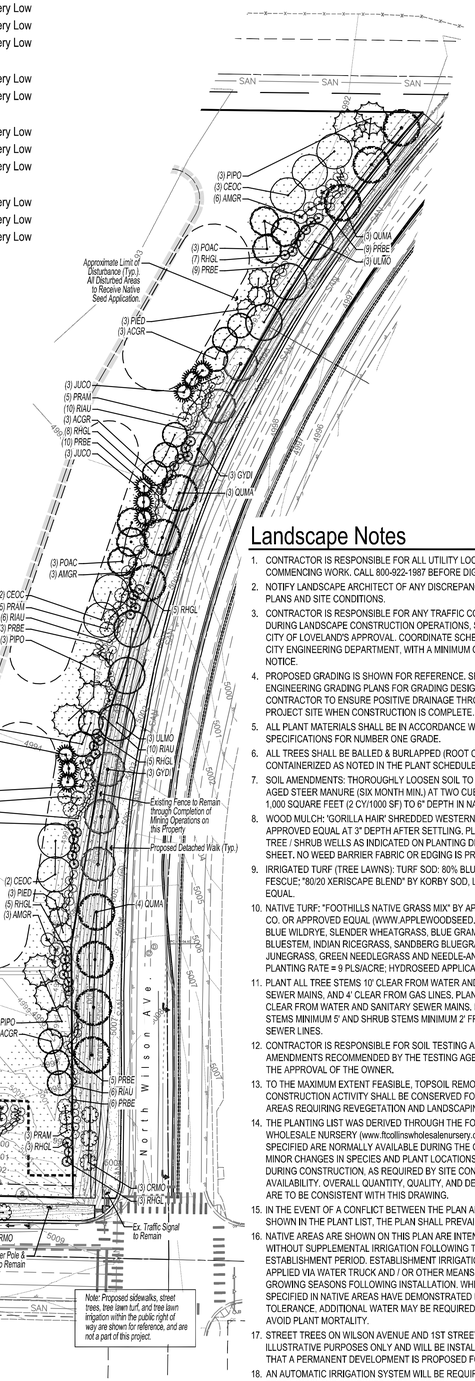
West of Wilson Avenue

| Plant Type | Plants Req'd / 100 LF | Adjustment | 100's of LF | Total Plants Required | Total Plants Provided |
|---|---|---|---|---|---|
| Canopy Trees | 5 | x 0.50 (50' buffer yard width per Table II, Section 4.04.02) | x 9.00 (±900 LF) | 23 | 24 |
| Understory Trees | 6 | | | 27 | 27 |
| Evergreen Trees | 4 | | | 23 | 24 |
| Shrubs | 30 | | | 135 | 135 |

Buffer Yard Type 'A'

East of Namaqua Avenue

| Plant Type | Plants Req'd / 100 LF | Adjustment | 100's of LF | Total Plants Required | Total Plants Provided |
|---|---|---|---|---|---|
| Canopy Trees | 1 | x 0.80 (25' buffer yard width per Table II, Section 4.04.02) | x 8.10 (±810 LF) | 7 | 7 |
| Understory Trees | 1 | | | 7 | 7 |
| Evergreen Trees | 0 | | | 0 | 0 |
| Shrubs | 3 | | | 20 | 20 |




## Landscape Notes

1. CONTRACTOR IS RESPONSIBLE FOR ALL UTILITY LOCATES PRIOR TO COMMENCING WORK. CALL 800-922-1987 BEFORE DIGGING.
2. NOTIFY LANDSCAPE ARCHITECT OF ANY DISCREPANCIES BETWEEN PLANS AND SITE CONDITIONS.
3. CONTRACTOR IS RESPONSIBLE FOR ANY TRAFFIC CONTROL REQUIRED DURING LANDSCAPE CONSTRUCTION OPERATIONS, SUBJECT TO THE CITY OF LOVELAND'S APPROVAL. COORDINATE SCHEDULE WITH THE CITY ENGINEERING DEPARTMENT, WITH A MINIMUM OF 48 HOUR NOTICE.
4. PROPOSED GRADING IS SHOWN FOR REFERENCE. SEE CIVIL ENGINEERING GRADING PLANS FOR GRADING DESIGN. LANDSCAPE CONTRACTOR TO ENSURE POSITIVE DRAINAGE THROUGHOUT THE PROJECT SITE WHEN CONSTRUCTION IS COMPLETE.
5. ALL PLANT MATERIALS SHALL BE IN ACCORDANCE WITH ANA SPECIFICATIONS FOR NUMBER ONE GRADE.
6. ALL TREES SHALL BE BALLED & BURLAPPED (ROOT CONTROL BAG), OR CONTAINERIZED AS NOTED IN THE PLANT SCHEDULE.
7. SOIL AMENDMENTS: THOROUGHLY LOOSEN SOIL TO 6" DEPTH. APPLY AGED STEER MANURE (SIX MONTH MIN.) AT TWO CUBIC YARDS PER 1,000 SQUARE FEET (2 CY/1000 SF) TO 6" DEPTH IN NATIVE TURF AREAS.
8. WOOD MULCH: 'GORILLA HAIR' SHREDDED WESTERN RED CEDAR OR APPROVED EQUAL AT 3" DEPTH AFTER SETTLING. PLACE ONLY WITHIN TREE / SHRUB WELLS AS INDICATED ON PLANTING DETAILS THIS SHEET. NO WEED BARRIER FABRIC OR EDGING IS PROPOSED.
9. IRRIGATED TURF (TREE LAWNS): TURF SOD: 80% BLUEGRASS / 20% FESCUE; "80/20 XERISCAPE BLEND" BY KORBY SOD, LLC OR APPROVED EQUAL.
10. NATIVE TURF: "FOOTHILLS NATIVE GRASS MIX" BY APPLEWOOD SEED CO. OR APPROVED EQUAL (WWW.APPLEWOODSEED.COM). CONTAINS: BLUE WILDRYE, SLENDER WHEATGRASS, BLUE GRAMA, LITTLE BLUESTEM, INDIAN RICEGRASS, SANDBERG BLUEGRASS, PRAIRIE JUNEGRASS, GREEN NEEDLEGRASS AND NEEDLE-AND-THREAD; PLANTING RATE = 9 PLS/ACRE; HYDROSEED APPLICATION.
11. PLANT ALL TREE STEMS 10' CLEAR FROM WATER AND SANITARY SEWER MAINS, AND 4' CLEAR FROM GAS LINES. PLANT SHRUB STEMS 4' CLEAR FROM WATER AND SANITARY SEWER MAINS. PLANT TREE STEMS MINIMUM 5' AND SHRUB STEMS MINIMUM 2' FROM STORM SEWER LINES.
12. CONTRACTOR IS RESPONSIBLE FOR SOIL TESTING AND PROVIDING AMENDMENTS RECOMMENDED BY THE TESTING AGENCY, SUBJECT TO THE APPROVAL OF THE OWNER.
13. TO THE MAXIMUM EXTENT FEASIBLE, TOPSOIL REMOVED DURING CONSTRUCTION ACTIVITY SHALL BE CONSERVED FOR LATER USE ON AREAS REQUIRING REVEGETATION AND LANDSCAPING.
14. THE PLANTING LIST WAS DERIVED THROUGH THE FORT COLLINS WHOLESALE NURSERY (www.ftcollinswholesalenursery.com). PLANTS SPECIFIED ARE NORMALLY AVAILABLE DURING THE GROWING SEASON. MINOR CHANGES IN SPECIES AND PLANT LOCATIONS MAY BE MADE DURING CONSTRUCTION, AS REQUIRED BY SITE CONDITIONS OR PLANT AVAILABILITY. OVERALL QUANTITY, QUALITY, AND DESIGN CONCEPT ARE TO BE CONSISTENT WITH THIS DRAWING.
15. IN THE EVENT OF A CONFLICT BETWEEN THE PLAN AND QUANTITIES SHOWN IN THE PLANT LIST, THE PLAN SHALL PREVAIL.
16. NATIVE AREAS ARE SHOWN ON THIS PLAN ARE INTENDED TO SURVIVE WITHOUT SUPPLEMENTAL IRRIGATION FOLLOWING THE ESTABLISHMENT PERIOD. ESTABLISHMENT IRRIGATION WILL BE APPLIED VIA WATER TRUCK AND / OR OTHER MEANS FOR TWO FULL GROWING SEASONS FOLLOWING INSTALLATION. WHILE PLANTS SPECIFIED IN NATIVE AREAS HAVE DEMONSTRATED DROUGHT TOLERANCE, ADDITIONAL WATER MAY BE REQUIRED IN DRY YEARS TO AVOID PLANT MORTALITY.
17. STREET TREES ON WILSON AVENUE AND 1ST STREET ARE SHOWN FOR ILLUSTRATIVE PURPOSES ONLY AND WILL BE INSTALLED AT SUCH TIME THAT A PERMANENT DEVELOPMENT IS PROPOSED FOR THE SITE.
18. AN AUTOMATIC IRRIGATION SYSTEM WILL BE REQUIRED TO IRRIGATE TREE LAWNS AND PROPOSED STREET TREES.

Not for Construction Unless Signed

LEE R. MARTIN
0546
06/06/2008
Original Date of Licensure
STATE OF COLORADO
LICENSED LANDSCAPE ARCHITECT

| REVISIONS | | |
|---|---|---|
| Description | By | Date |
| 8/28/15 CITY COMMENTS RESPONSE | LRM | 2/12/16 |
| 3/1/16 CITY COMMENTS RESPONSE | LRM | 3/14/16 |


Landmark Engineering
Engineers Planners Surveyors Geotechnical
3521 West Eisenhower Blvd., Loveland, Colorado 80537
(970) 667-2519 Fax (970) 667-8705
www.landmarkltd.com


DATE: JUNE 2015
SCALE: 1" = 60'
DRAWN: LRM
DESIGNED: LRM
APPROVED: --

CLIENT: Loveland Ready-Mix

TITLE: Special Review #PZ-916 Site Development Plan
BIG THOMPSON FARMS GRAVEL MINE
MINING MITIGATION LANDSCAPE PLAN

JOB NO.: LOVREA
2F6B57-A1

SHEET 4 OF 6

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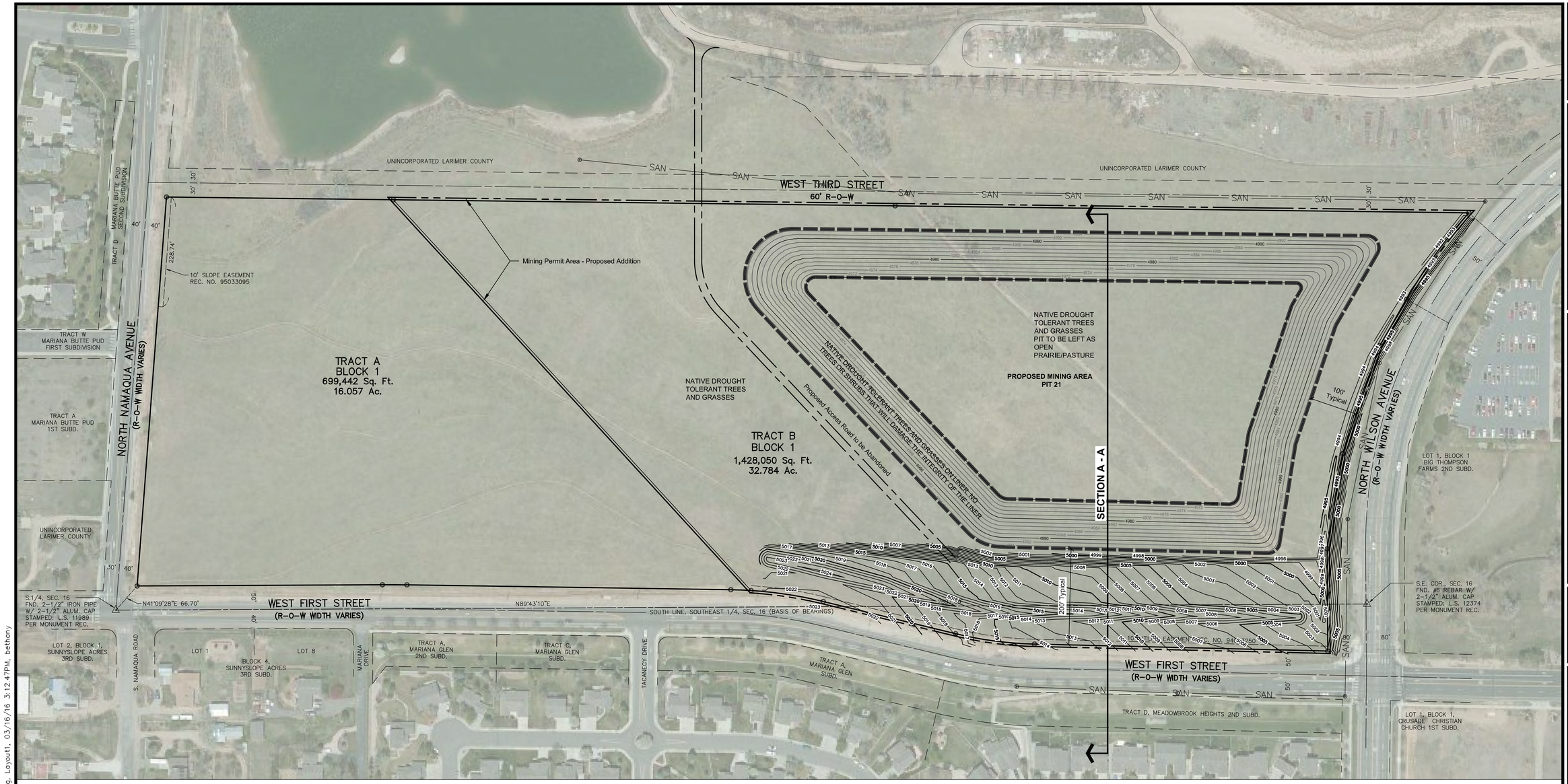


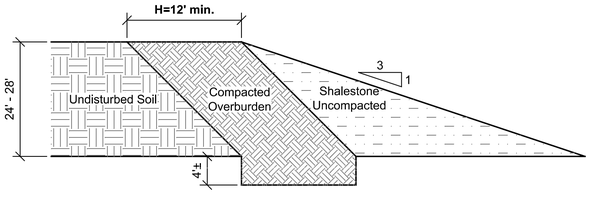

Drainage Plan
Scale: 1"=100'

## RECLAMATION PLAN

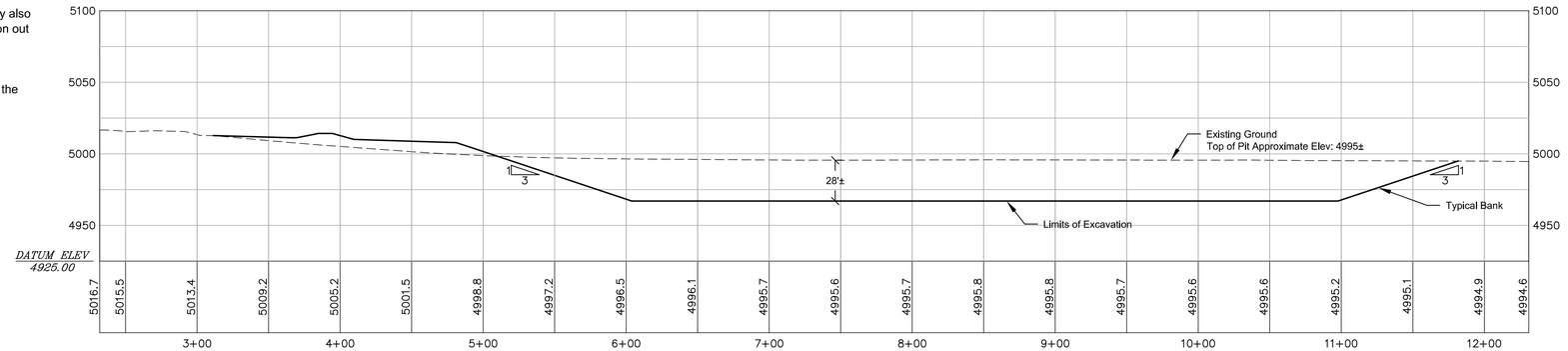
1. The intent of reclamation is to leave this pit as an open meadow to be used for camping, hiking, and fishing. However, it may also be used for storm detention or water storage. The propose pond lining will provide this opportunity since it will keep infiltration out or hold storage water in without seepage.

The banks of the pit are to be sloped at a ratio of 3:1 from finished grade. (See detail this sheet)

3. The pit will be landscaped with shrubs, grass, and existing trees being kept at least 30 feet from the liner.
4. The topsoil will be replaced at a minimum depth of 6 inches and then seeded with a mixture of grasses as recommended in the reclamation plan.




PROPOSED POND LINING
Loveland Ready Mix, Pond #21 - Loveland, Colorado
(no scale)




SECTION A-A Typical Pit Cross Section
Scale: 1"=50'

IF THIS STAMP IS NOT RED, IT IS NOT ORIGINAL.

| REVISIONS | By | Date |
|---|---|---|
| Description | | |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www. landmarkltd.com


DATE: DEC. 2015
SCALE: AS NOTED
DRAWN: BRW
DESIGNED: RAH
APPROVED: RAH

CLIENT: LOVELAND READY MIX CONCRETE, INC.

TITLE: SPECIAL REVIEW 916
PIT #21 ADDITION TO THE LARIMER PITS
RECLAIMATION PLAN

JOB NO.: LOVREA
2F6B-57-330

SHEET 5 OF 6



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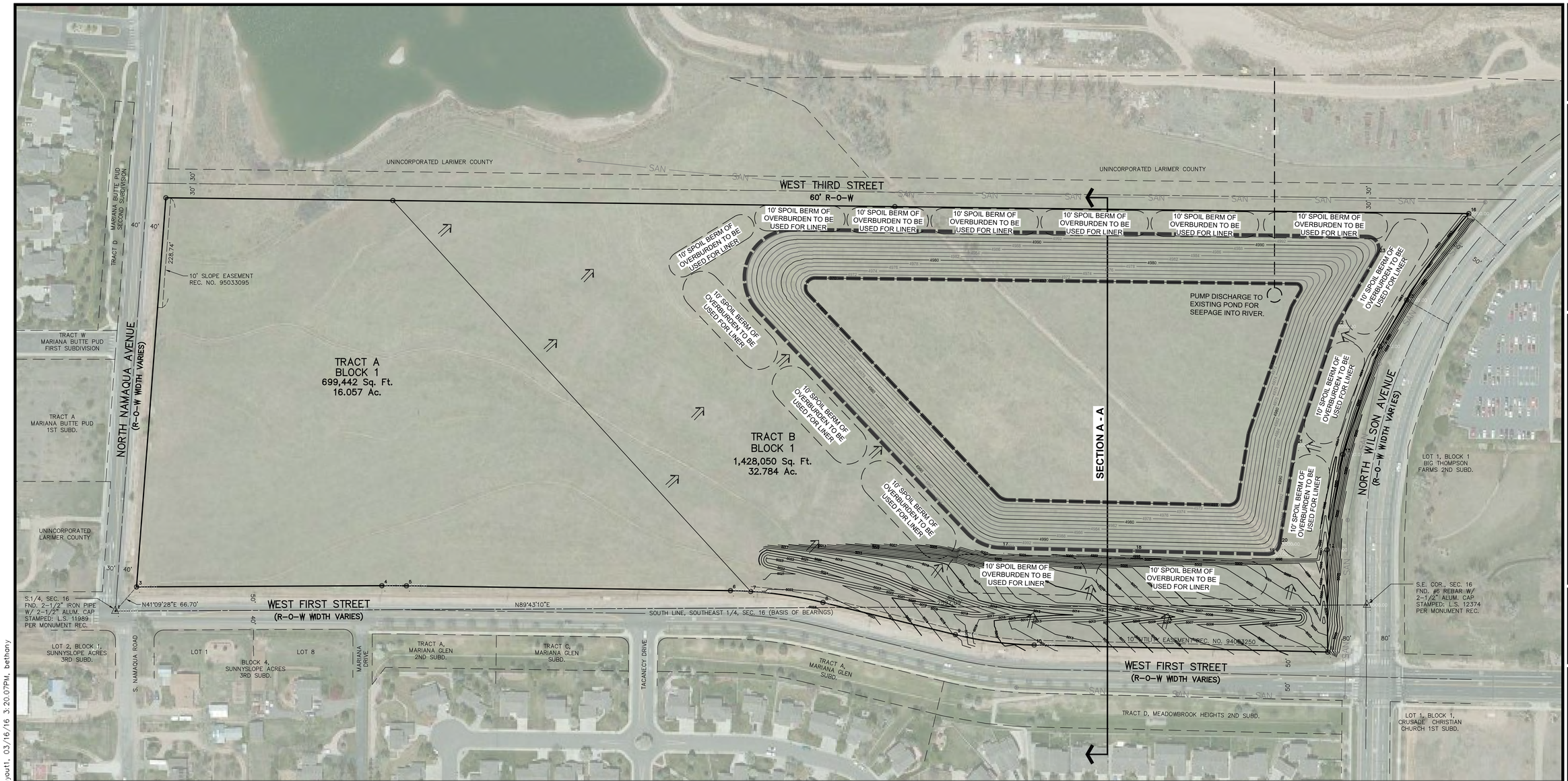
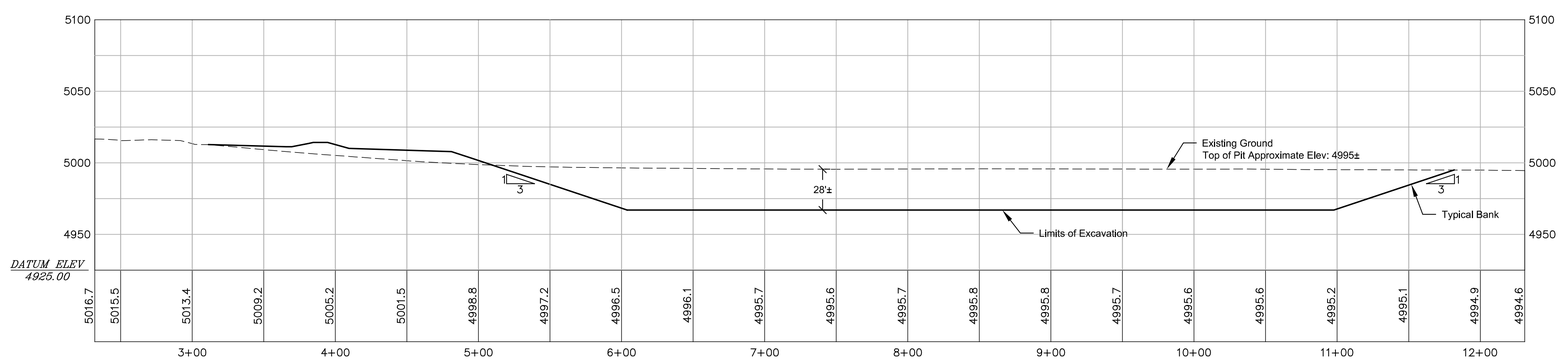



Drainage Plan
Scale: 1"=100'

**THE SITE CURRENTLY SLOPES TO THE NORTHEAST. EXISTING SITE DRAINAGE SHEET FLOWS IN THIS DIRECTION. DURING THE MINING OPERATIONS RUNOFF WILL BE ALLOWED TO FLOW INTO THE PIT. A DEWATERING PUMP WILL BE REQUIRED TO MINE THE PIT. THIS PUMP WILL ALSO PUMP STORM WATER INTO THE ADJACENT PONDS TO THE NORTH THAT ARE UNLINED AND ALLOW GROUND WATER AND STORM WATER TO RETURN TO THE RIVER BY NATURAL FILTRATION THROUGH THE REMAINING SANDS AND GRAVELS WHICH ACT AS A SAND FILTER.**




SECTION A-A Typical Pit Cross Section
Scale: 1"=50'

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| REVISIONS | By | Date |
|---|---|---|
| Description | | |

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www.landmarkltd.com

DATE: JULY 2015
SCALE: AS NOTED
DRAWN: BRW
DESIGNED: RAH
APPROVED: RAH

CLIENT: LOVELAND READY MIX CONCRETE, INC.

TITLE: SPECIAL REVIEW 916
PIT #21 ADDITION TO THE LARIMER PITS
GENERAL DRAINAGE PLAN

JOB NO.: LOVREA
2F6B-57-330

SHEET 6 OF 6



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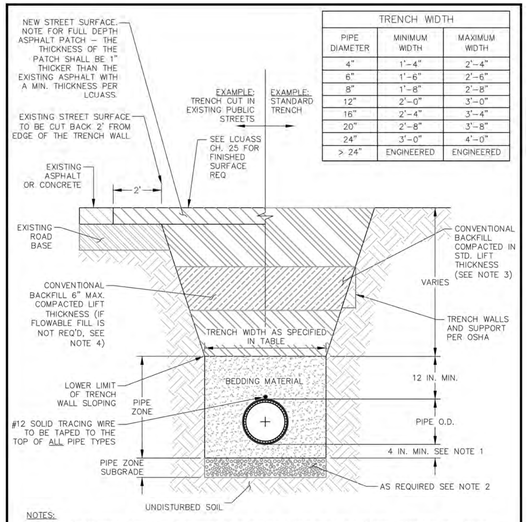
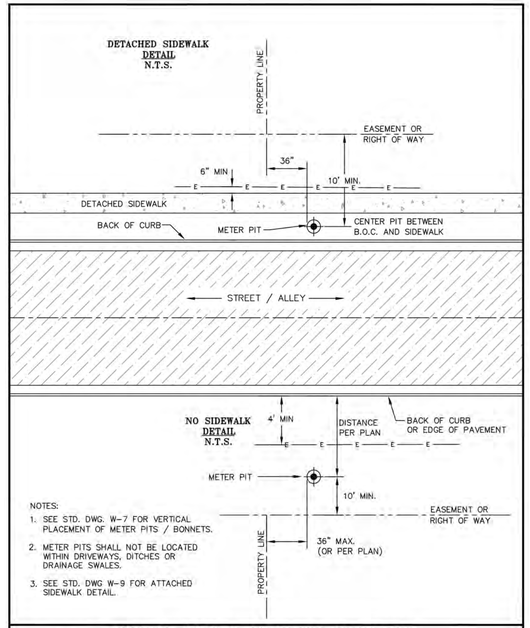



| TRENCH WIDTH | | |
|---|---|---|
| PIPE DIAMETER | MINIMUM WIDTH | MAXIMUM WIDTH |
| 4" | 1'-4" | 2'-4" |
| 6" | 1'-6" | 2'-6" |
| 8" | 1'-8" | 2'-8" |
| 12" | 2'-0" | 3'-0" |
| 16" | 2'-4" | 3'-4" |
| 20" | 2'-8" | 3'-8" |
| 24" | 3'-0" | 4'-0" |
| > 24" | ENGINEERED | ENGINEERED |

NOTES:
1. GRANULAR MATERIAL SHALL BE A MINIMUM OF 4-INCHES BELOW PIPE OR 1/4 PIPE DIAMETER, WHICHEVER IS GREATER.
2. STABILIZATION MATERIAL MAY BE REQUIRED BY THE DEPARTMENT TO REPLACE THE TOP 6-INCHES OF THE PIPE SUBGRADE. INSTALL GEOTEXTILE FABRIC BETWEEN THE STABILIZATION MATERIAL AND PIPE BEDDING.
3. TRENCH REQUIREMENTS WITHIN OPEN AREAS OR AREAS TO BE DEVELOPED SHALL BE PURSUANT TO DEPARTMENT STANDARDS.
4. WHERE THE SURROUNDING SOILS ARE NON-EXPANSIVE, A FLOWABLE FILL MAY BE SUBSTITUTED FOR BACKFILL MATERIAL.

## WATER MAIN TRENCH REQUIREMENTS

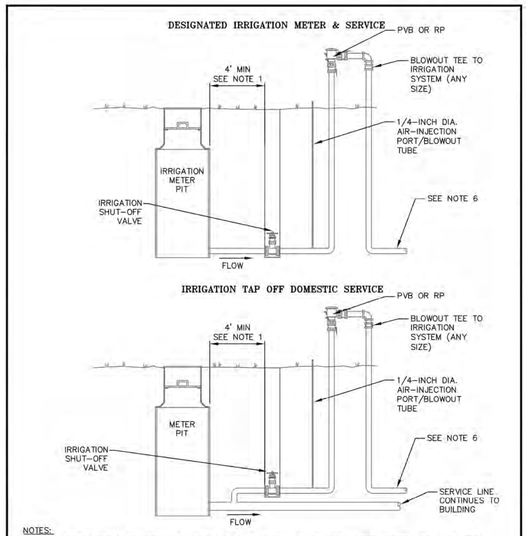
CITY OF LOVELAND DEPARTMENT OF WATER AND POWER | W/WW CONSTRUCTION DRAWINGS | DATE APPROVED: 08/07 | DATE REVISED: 01/10 | DRAWING W-1




NOTES:
1. SEE STD. DWG. W-7 FOR VERTICAL PLACEMENT OF METER PITS / BONNETS.
2. METER PITS SHALL NOT BE LOCATED WITHIN DRIVEWAYS, DITCHES OR DRAINAGE SWALES.
3. SEE STD. DWG W-9 FOR ATTACHED SIDEWALK DETAIL.

## TYPICAL 3/4" & 1" METER LOCATIONS

CITY OF LOVELAND DEPARTMENT OF WATER AND POWER | W/WW CONSTRUCTION DRAWINGS | DATE APPROVED: 08/07 | DATE REVISED: 2014 6TH EDITION | DRAWING W-8




NOTES:
1. IRRIGATION SHUT-OFF VALVE TEE SHALL BE 4-FOOT MINIMUM DISTANCE FROM OUTSIDE OF METER PIT.
2. NO STOP AND WASTE VALVE ALLOWED.
3. PVB NEEDS TO BE 12-INCHES ABOVE THE HIGHEST SPRINKLER HEAD. RP NEEDS TO BE 12" ABOVE THE GROUND.
4. DO NOT BLOW AIR THROUGH THE BACKFLOW ASSEMBLY.
5. IRRIGATION SYSTEMS WHICH USE COMPRESSED AIR TO PURGE THE SYSTEM SHALL NOT HAVE AIR INJECTION PORTS LARGER THAN 1/4-INCH DIAMETER UPSTREAM OF THE BACKFLOW PREVENTOR.
6. AIR-INJECTOR PORT LOCATED DOWNSTREAM OF VACUUM BREAKER CAN BE ANY SIZE.

## TYPICAL IRRIGATION SYSTEM SERVICE DETAIL

CITY OF LOVELAND DEPARTMENT OF WATER AND POWER | W/WW CONSTRUCTION DRAWINGS | DATE APPROVED: 4/30/12 | DATE REVISED: 6TH EDITION | FIGURE W-37

**REVIEWED BY**
**CITY OF LOVELAND – TRANSPORTATION ENGINEERING DIVISION**

BY: _____ DATE: _____

**CITY OF LOVELAND – WATER/WASTEWATER ENGINEERING DIVISION**

BY: _____ DATE: _____

**CITY OF LOVELAND – FIRE DEPARTMENT**

BY: _____ DATE: _____

**CITY OF LOVELAND – ELECTRICAL ENGINEERING DIVISION**

BY: _____ DATE: _____

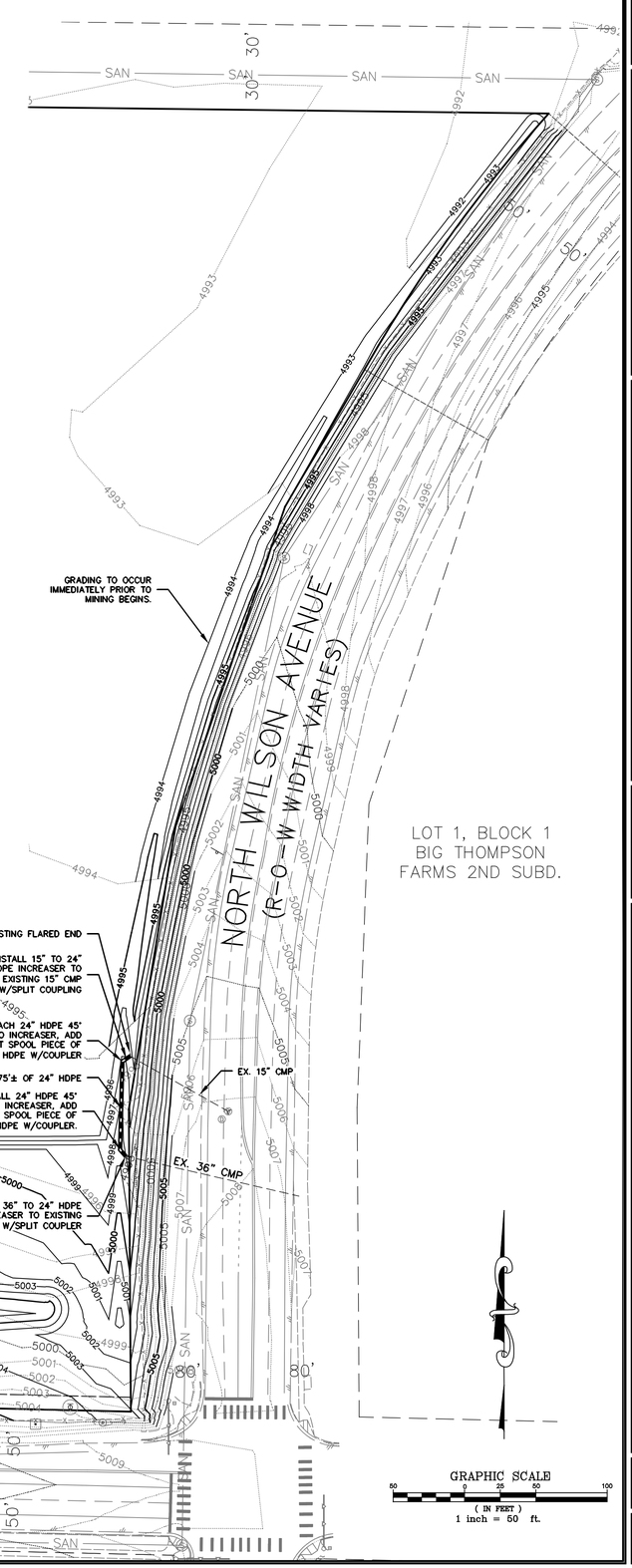
**CITY OF LOVELAND – CURRENT PLANNING DIVISION**

BY: _____ DATE: _____

**CITY OF LOVELAND – STORM DRAINAGE ENGINEERING DIVISION**

BY: _____ DATE: _____

**The City of Loveland review constitutes compliance with the City's Development Standards, subject to these plans being stamped, signed, and dated by the professional engineer of record. Review by the City does not constitute approval of the plan design. Errors in the design or calculations remain the responsibility of the engineer of record.**
**This review does not constitute review/approval of any private on-site improvements which may be shown. These plans are intended to be for city review of public improvements adjacent to the property. Construction of on-site private improvements cannot commence until all required traffic worksheet or study(s), final development plan(s), special review(s), and building permit(s) are complete, approved and on file with the City of Loveland**

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| REVISIONS | | |
|---|---|---|
| Description | By | Date |


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DATE: NOV. 2015
SCALE: AS NOTED
DRAWN: BRW
DESIGNED: RAH
APPROVED: RAH

CLIENT: LOVELAND READYMIX

TITLE: SPECIAL REVIEW 916
PIT #21 ADDITION TO THE LARIMER PITS
UTILITY PLAN – IRRIGATION SERVICE & STORMWATER

JOB NO.: LOVREA
2F6B57-00-330

SHEET U1 OF U1



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**Behrens and Associates, Inc.**
*Acoustics, Noise and Vibration Consultants*

April 27, 2015

Loveland Ready Mix Concrete
P.O. Box 299
Loveland, CO 80539

Attention: Stephanie Fancher

Subject: Proposed Loveland Ready Mix Concrete, Inc. Gravel Pit Expansion Project Noise Study

Dear Ms. Fancher,

We have completed the noise assessment of the proposed Loveland Ready Mix Concrete Gravel Pit Expansion Project. The assessment was performed in order to determine compliance with the City of Loveland noise standards during the scraping and mining operations within the proposed expansion area. This report provides the City of Loveland noise standards, the results of an ambient noise level survey, the predicted unmitigated and mitigated scraping and mining operational noise levels and an assessment of impact relative to the City's standards.

## Site Location and Condition

The proposed Loveland Gravel Pit Expansion site is located approximately 200 feet north of West 1st Street and 100 feet west of Wilson Avenue in City of Loveland, Colorado. The site is surrounded by residential zones to the west and south, and the City of Loveland Service Center to the east, which is an industrial property. The aerial photograph in Figure 1 indicates the locations of the proposed site and existing noise level survey locations.

## City of Loveland Noise Standards

Sections 7.32.010, 7.32.040 and 7.32.060 of the City of Loveland Ordinance contain noise limits. These sections state:

***7.32.010 Prohibitions***

*A. It is unlawful to make or cause to be made, or create to be created, any noise, the sound levels of which, when measured at a distance of twenty-five feet or more from any property line, are in excess of the limits set out Section 7.32.040.*

***7.32.040 – Noise limitation***

*Except as provided in Section 7.32.060 and 7.32.070, no noise shall exceed the levels set out below when measured pursuant to Section 7.32.050; provided however, that a violation of section 7.32.010(C) may occur without exceeding these levels and without a measurement:*

| ***Zone*** | ***Noise Limit*** | |
|---|---|---|
| | ***Daytime (7 am – 9 pm)*** | ***Nighttime (9 pm – 7 am)*** |
| *Residential* | *55 dB(A)* | *50 dB(A)* |
| *Commercial* | *60 dB(A)* | *55 dB(A)* |
| *Industrial* | *75 dB(A)* | *70 dB(A)* |

***7.32.060 – Exception***
*A. In the hours between seven a.m. and the next nine p.m. the noise levels permitted in 7.32.040 may be increased by 10 dB(A) for a period of not exceeding fifteen minutes in any one hour.*

*F. Construction projects shall be subject to the maximum noise level specified for industrial zones as indicated in 7.32.040 for the period of the construction project, provided that the proper construction permit has been issued by the city.*

**Existing Noise Levels**

Pre-operational noise level surveys were performed from Friday March 6 to Monday March 9, 2015 and from Friday, March 13 to Monday, March 16, 2015 to establish the existing sound level at the nearby zones. The surveys were completed with five Bruel and Kjaer Type 1 Model 2250 sound level meters. The sound level meters were calibrated prior deployment. The attached aerial photograph in Figure 1 indicates the five locations of the noise level survey measurements.

Results tables and charts are provided as Figures 3 through 16. The hourly average sound levels begin on the reported hour (e.g., the 9 p.m. hourly average sound level is the average sound level between 9 p.m. and 10 p.m.). All sound levels are reported utilizing the A-weighted decibel scale (dBA).

The sound level exceeded for fifteen minutes in an hour (or 25% of the time) is provided as the L25 sound level.

A table of the measured existing noise levels and two results charts of each location are provided. The first chart displays the measured hourly average (1-hr LAeq) and L25 sound levels over the four-day measurement period. The second chart shows a 24-hour overlay of the four measurement days of the measured hourly average (1-hr LAeq). Both charts also include the noise limits. Weather reports during the survey are attached (see Figure 17).

**Ambient Noise Level Survey Results**

The proposed operation will run during the daytime only between 7 AM to 7 PM, Monday through Saturday and therefore the lowest hourly average noise levels during the daytime at each location were assessed for the nearby properties. Since the northern property is owned by the owner of the proposed site and is not within the City of Loveland, it has been excluded from this analysis.

The pre-operational ambient noise level survey indicates that lowest measured daytime hourly average noise level (1-hr LAeq) at Location 1, Location 2, Location 3 and Location 5 did not exceed the City's noise limits. However, the lowest measured daytime hourly average noise levels at Location 4 exceeded the noise limit by 0.8 dB. The lowest measured daytime hourly average noise levels and noise limits for residential and industrial zones are summarized in Table 1.

**Table 1. Measured Lowest Existing Noise Levels**

| Location | Measured Lowest Daytime Hourly Noise Level (1-hr LAeq) | Noise Limit |
|---|---|---|
| **Location 1** | 51.9 dBA at 7 AM on 3/14/15 | 55 dBA (Residential Zone daytime) |
| **Location 2** | 47.8 dBA at 5 PM on 3/13/15 | 55 dBA (Residential Zone daytime) |
| **Location 3** | 53.8 dBA at 6 PM on 3/13/15 | 55 dBA (Residential Zone daytime) |
| **Location 4** | 55.8 dBA at 9 AM on 3/14/15 | 55 dBA (Residential Zone daytime) |
| **Location 5** | 56.3 dBA at 7 AM on 3/9/15 | 75 dBA (Industrial Zone daytime) |

**Noise Modeling Results - Unmitigated**

The proposed operations will utilize the current Loveland gravel pit facility operation equipment (dozer, excavator, loader and haul trucks). A noise level survey of the operational equipment was performed on Tuesday, March 10, 2015 while the individual equipment was in normal operation at the existing Loveland gravel pit facility. The survey was conducted with a Bruel & Kjaer Hand-held Analyzer 2250 sound level meter. Table 2 lists the measured sound power levels of the equipment.

**Table 2. Sound Power Levels of Equipment**

| Equipment | Frequency | | | | | | | | | Overall (dBA) |
|---|---|---|---|---|---|---|---|---|---|---|
| | 31 Hz | 63 Hz | 125 Hz | 250 Hz | 500 Hz | 1k Hz | 2k Hz | 4k Hz | 8k Hz | |
| Excavator | 58.7 | 79.9 | 95.3 | 104.5 | 103.2 | 102.0 | 98.3 | 93.7 | 85.1 | 108.9 |
| Dozer | 69.2 | 80.1 | 96.6 | 102.3 | 106.1 | 108.2 | 104.1 | 98.9 | 91.1 | 112.1 |
| Loader (with back-up alarm) | 58.7 | 79.2 | 79.0 | 95.4 | 92.8 | 103.6 | 104.2 | 99.5 | 83.3 | 108.1 |
| Haul Truck | 51.5 | 66.0 | 87.3 | 90.5 | 96.8 | 104.3 | 97.0 | 93.0 | 86.5 | 106.1 |

**Table 3. Equipment Used for Scraping and Mining Operations**

| Operation | Equipment | Manufacture & Model | Quantity | Usage Factor (%) |
|---|---|---|---|---|
| **Scraping Operation** | Excavator | Komatsu PL400 | 1 | 50 |
| | Dozer | Caterpillar D8 | 1 | 50 |
| | Loader | Caterpillar 980 | 1 | 10 |
| **Mining Operation** | Excavator | Komatsu PL400 | 1 | 50 |
| | Loader | Caterpillar 980 | 1 | 50 |
| | Haul Truck | Caterpillar D400 | 2 | 10 |

Table 3 indicates the equipment list of each operation with the usage factors provided by Loveland Ready Mix Concrete. To establish worst case scenarios for the neighboring properties during operations, three scenarios were modeled for each operation with all equipment running at three locations around the site. These locations are shown in Attachment 18. The western location simulates the worst-case scenario for the residential properties and school to the west, the southern location simulates the worst case scenario for the residential properties to the south and the eastern location shows the worst case for the industrial properties to the east. It is noted that the equipment does not use standard backup alarms. Instead, white noise alarms are used, which are designed to reduce annoyance due to noise. The white noise alarms are included in the model. The results of the unmitigated noise modeling are as follows:

1. **Unmitigated Scraping Operation Noise Model**

The scraping operation noise models include an excavator, a dozer and a loader.

a) Scraping Operation at Western Location

The noise contour map in Figure 19 shows the predicted *unmitigated* scraping operation noise results. The predicted *unmitigated* noise levels of the scraping operation are up to 42.6 dBA at the western properties, 48.8 dBA at the southern properties, 47.3 dBA at the eastern properties.

b) Scraping Operation at Southern Location
The noise contour map in Figure 20 shows the predicted *unmitigated* scraping operation noise results. The predicted *unmitigated* noise levels of the scraping operation are up to 40.6 dBA at the western properties, 57.8 dBA at the southern properties, 53.2 dBA at the eastern properties.

c) Scraping Operation at Eastern Location
The noise contour map in Figure 21 shows the predicted *unmitigated* scraping operation noise results. The predicted *unmitigated* noise levels of the scraping operation are up to 38.8 dBA at the western properties, 49.4 dBA at the southern properties, 59.7 dBA at the eastern properties.

**2. Unmitigated Mining Operation Noise Model**

The mining operation noise models include an excavator, a loader and two haul trucks.

a) Mining Operation at Western Location
The noise contour map in Figure 22 shows the predicted *unmitigated* mining operation noise results. The predicted *unmitigated* highest noise levels of the mining operation are 41.7 dBA along the western properties, 48.1 dBA along the southern properties, 47.3 dBA along the eastern properties.

b) Mining Operation at Southern Location
The noise contour map in Figure 23 shows the predicted *unmitigated* mining operation noise results. The predicted *unmitigated* noise levels of the mining operation are 38.2 dBA along the western properties, 55.6 dBA along the southern properties, 57.8 dBA along the eastern properties.

c) Mining Operation at Eastern Location
The noise contour map in Figure 24 shows the predicted *unmitigated* mining operation noise results. The predicted *unmitigated* noise levels of the mining operation are 38.0 dBA along the western properties, 48.3 dBA along the southern properties, 58.7 dBA along the eastern properties.

The predicted unmitigated scraping and mining noise level results with daytime noise limits are summarized in Table 4.

**Table 4. Unmitigated Scraping and Mining Operation Noise Modeling Results including Noise Limits**

| Properties | Predicted Operation Noise Level (dBA) | | | | | | Noise Limit (dBA) |
|---|---|---|---|---|---|---|---|
| | Western Location | | Southern Location | | Eastern Location | | |
| | Scraping | Mining | Scraping | Mining | Scraping | Mining | |
| **Western Properties** | 42.6 | 41.7 | 40.6 | 38.2 | 38.8 | 38.0 | 55.0* |
| **Southern Properties** | 48.8 | 48.1 | 57.8 | 55.6 | 49.4 | 48.3 | 55.0* |
| **Eastern Properties** | 47.3 | 47.3 | 53.2 | 57.8 | 59.7 | 58.7 | 75.0 |

* - Noise Limit for Construction Grading Permit is 75 dBA

The modeled noise levels in this section represent the contribution of the operations to the overall sound levels at the specified receiver points. Actual field sound level measurements may vary from the projected noise levels due to existing non-operation related noise sources such as traffic, other human activity, or environmental factors.

The noise impact modeling was completed with Brüel & Kjær Predictor Version 10.10 software which meets ISO 9613.1/2 compliance requirements. The operations were modeled while taking into consideration the topographical features and ground cover of the site and adjacent surroundings.

## Assessment of Impact

The scraping and mining operations will occur during the daytime period and therefore the operations must comply with the City of Loveland noise limits of 55 dBA for the residential zone and 75 dBA for the industrial zone. Our analysis indicates that with no mitigation, the operational noise levels will exceed the residential noise limit of 55 dBA at the residential properties to the south by up to 2.8 dBA during scraping and by up to 0.6 dBA during the mining operation. Therefore mitigation measures are required that reduces sound levels by at least 2.8 dBA.

## Proposed Mitigation Measures

The following proposed mitigation measures will be built before the beginning of the scraping operation.

1. 4-ft high landscaping berm with trees and shrubberies will be installed near West 1st Street along the south side of the site.

2. 10-ft high stockpile will be built along the entire south edge of the proposed site.

**Noise Modeling Results - Mitigated**

To establish worst case scenarios for the neighboring properties during operations, three scenarios were modeled for each operation. Those scenarios are the same as the unmitigated scenarios but with proposed mitigation measures installed. The results of the mitigated noise modeling are as follows:

**1. Mitigated Scraping Operation Noise Model**

The scraping operation noise models include an excavator, a dozer and a loader.

a) Scraping Operation at Western Location
The noise contour map in Figure 26 shows the predicted *mitigated* scraping operation noise results. The predicted *mitigated* noise levels of the scraping operation are up to 42.6 dBA at the western properties, 48.8 dBA at the southern properties, 47.6 dBA at the eastern properties.

b) Scraping Operation at Southern Location
The noise contour map in Figure 27 shows the predicted *mitigated* scraping operation noise results. The predicted *mitigated* noise levels of the scraping operation are up to 40.6 dBA at the western properties, 55.8 dBA at the southern properties, 53.0 dBA at the eastern properties.

c) Scraping Operation at Eastern Location
The noise contour map in Figure 28 shows the predicted *mitigated* scraping operation noise results. The predicted *mitigated* noise levels of the scraping operation are up to 38.8 dBA at the western properties, 49.4 dBA at the southern properties, 58.9 dBA at the eastern properties.

**1. Mitigated Mining Operation Noise Model**

The mining operation noise models include an excavator, a loader and two haul trucks. Also the noise models include the area condition where the scraping operation lowered the terrain/elevation minimum 4 feet.

a) Mining Operation at Western Location
The noise contour map in Figure 29 shows the predicted *mitigated* mining operation noise results. The predicted *mitigated* highest noise levels of the mining operation are 31.6 dBA along the western properties, 46.0 dBA along the southern properties, 37.6 dBA along the eastern properties.

b) Mining Operation at Southern Location
The noise contour map in Figure 30 shows the predicted *mitigated* mining operation noise results. The predicted *mitigated* noise levels of the mining operation are 36.2 dBA along the western properties, 43.1 dBA along the southern properties, 47.2 dBA along the eastern properties.

c) Mining Operation at Eastern Location
The noise contour map in Figure 31 shows the predicted *mitigated* mining operation noise results. The predicted *mitigated* noise levels of the mining operation are 38.0 dBA along the western properties, 48.3 dBA along the southern properties, 49.5 dBA along the eastern properties.

The predicted mitigated scraping and mining noise level results with daytime noise limits are summarized in Table 5.

**Table 5. Mitigated Scraping and Mining Operation Noise Modeling Results including Noise Limits**

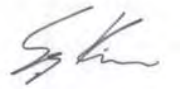
| Properties | Predicted Operational Noise Level (dBA) | | | | | | Noise Limit (dBA) |
|---|---|---|---|---|---|---|---|
| | Western Location | | Southern Location | | Eastern Location | | |
| | Scraping | Mining | Scraping | Mining | Scraping | Mining | |
| **Western Properties** | 42.6 | 31.6 | 40.6 | 36.2 | 38.8 | 38.0 | 55.0* |
| **Southern Properties** | 48.8 | 46.0 | 55.8 | 43.1 | 49.4 | 48.3 | 55.0* |
| **Eastern Properties** | 47.6 | 37.6 | 53.0 | 47.2 | 58.9 | 49.5 | 75.0 |

* - Noise Limit for Construction Grading Permit is 75 dBA

**Conclusion**

Based on the predicted scraping and mining operational noise levels, the noise level without mitigation will exceed the City of Loveland noise limit by up to 2.8 dBA during scraping operations and up to 0.6 dBA during mining operations. With implementation of the proposed mitigation measures, 10-ft high stockpile and 4-ft high landscaping berm, the noise level of scraping operation will exceed the residential noise limit of 55 dBA at the residential properties to the south by up to 0.8 dBA. However, if the scraping operation may be operated under a construction permit from the City, the mitigated noise levels of scraping and mining operation will comply with the City noise limits at all surrounding properties.

Very truly yours,



Simon Kim
Acoustical Consultant

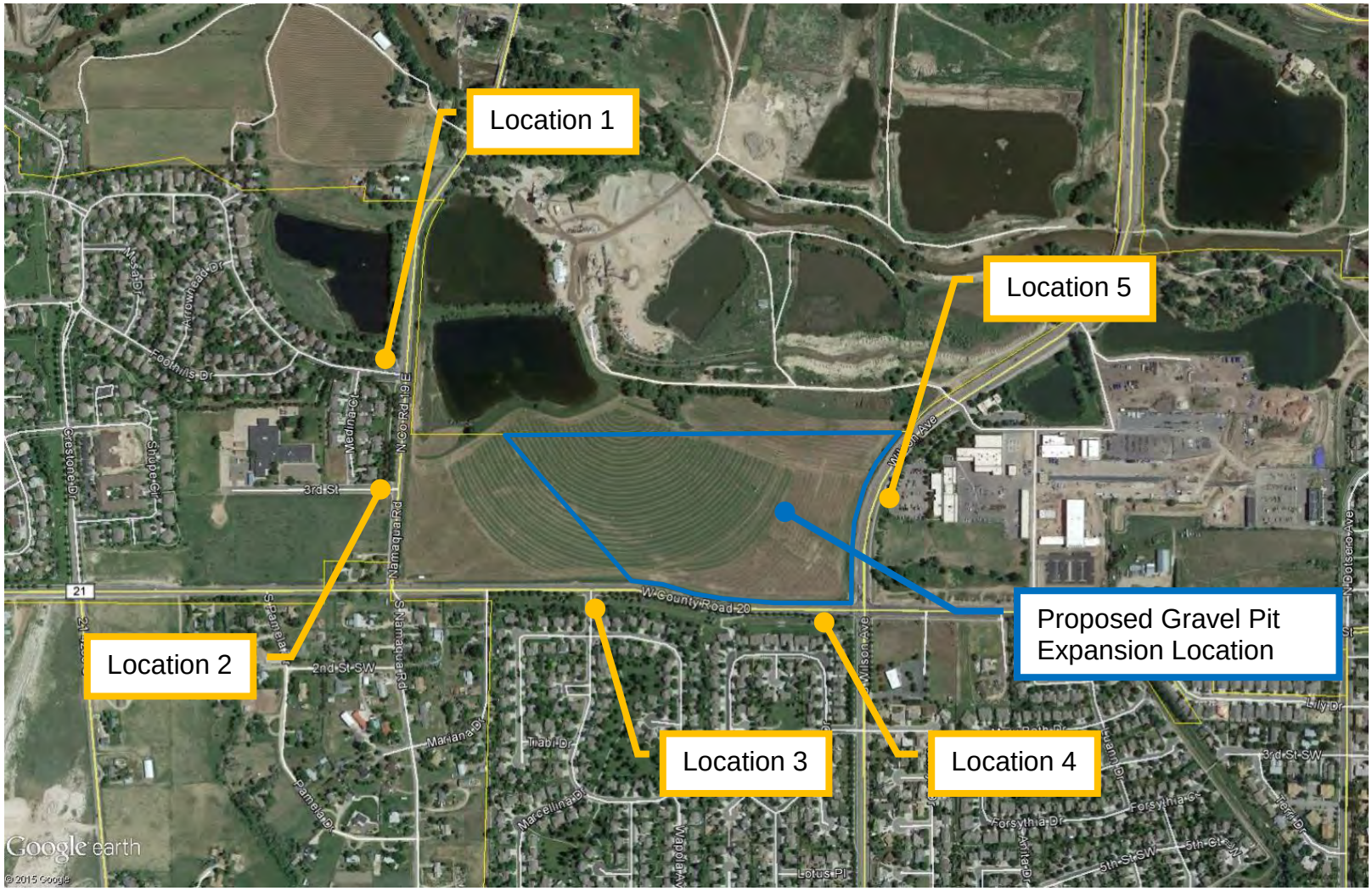



**Figure 1. Proposed Gravel Pit Expansion Site and Ambient Noise Level Survey Locations**

| Time | 3/13/2015 (Friday) | | 3/14/2015 (Saturday) | | 3/15/2015 (Sunday) | | 3/16/2015 (Monday) | |
|---|---|---|---|---|---|---|---|---|
| | 1-hr LAeq | L25 | 1-hr LAeq | L25 | 1-hr LAeq | L25 | 1-hr LAeq | L25 |
| 12:00 AM | | | 45.4 | 40.6 | 46.9 | 42.6 | 40.6 | 37.4 |
| 1:00 AM | | | 45.1 | 38.5 | 38.9 | 36.0 | 42.5 | 37.5 |
| 2:00 AM | | | 40.0 | 36.6 | 41.7 | 37.4 | 39.7 | 33.8 |
| 3:00 AM | | | 41.0 | 35.6 | 41.5 | 36.6 | 42.7 | 37.9 |
| 4:00 AM | | | 42.9 | 38.5 | 48.1 | 35.6 | 44.3 | 39.5 |
| 5:00 AM | | | 44.3 | 39.8 | 45.2 | 41.3 | 49.6 | 48.1 |
| 6:00 AM | | | 49.5 | 45.8 | 48.6 | 45.2 | 56.4 | 55.3 |
| 7:00 AM | | | 51.9 | 49.9 | 50.9 | 47.9 | 57.2 | 57.6 |
| 8:00 AM | | | 54.5 | 54.0 | 53.7 | 53.3 | 55.9 | 56.4 |
| 9:00 AM | | | 57.3 | 53.7 | 53.1 | 51.5 | 53.6 | 53.5 |
| 10:00 AM | | | 53.6 | 52.9 | 55.2 | 53.9 | 55.9 | 56.3 |
| 11:00 AM | 56.0 | 55.9 | 63.3 | 54.1 | 53.8 | 52.5 | 55.4 | 55.5 |
| 12:00 PM | 55.6 | 55.8 | 57.6 | 52.7 | 58.9 | 54.3 | 54.1 | 53.1 |
| 1:00 PM | 56.6 | 56.3 | 53.2 | 52.3 | 54.5 | 53.1 | | |
| 2:00 PM | 54.6 | 54.5 | 56.7 | 52.6 | 55.7 | 53.0 | | |
| 3:00 PM | 56.1 | 55.1 | 54.9 | 53.4 | 54.5 | 54.0 | | |
| 4:00 PM | 55.8 | 56.0 | 56.6 | 53.9 | 56.3 | 52.9 | | |
| 5:00 PM | 55.4 | 55.9 | 54.5 | 53.7 | 58.5 | 53.5 | | |
| 6:00 PM | 55.8 | 55.6 | 53.7 | 53.1 | 56.4 | 53.7 | | |
| 7:00 PM | 53.8 | 53.1 | 53.3 | 51.5 | 54.3 | 52.8 | | |
| 8:00 PM | 52.1 | 51.6 | 50.9 | 49.9 | 51.4 | 49.2 | | |
| 9:00 PM | 51.3 | 50.2 | 53.8 | 49.7 | 50.8 | 45.6 | | |
| 10:00 PM | 49.8 | 47.1 | 50.6 | 47.4 | 48.3 | 41.6 | | |
| 11:00 PM | 48.0 | 43.8 | 47.2 | 42.3 | 43.9 | 39.4 | | |

**Figure 2. Measured Ambient Sound Level Data (dBA) at Location 1**

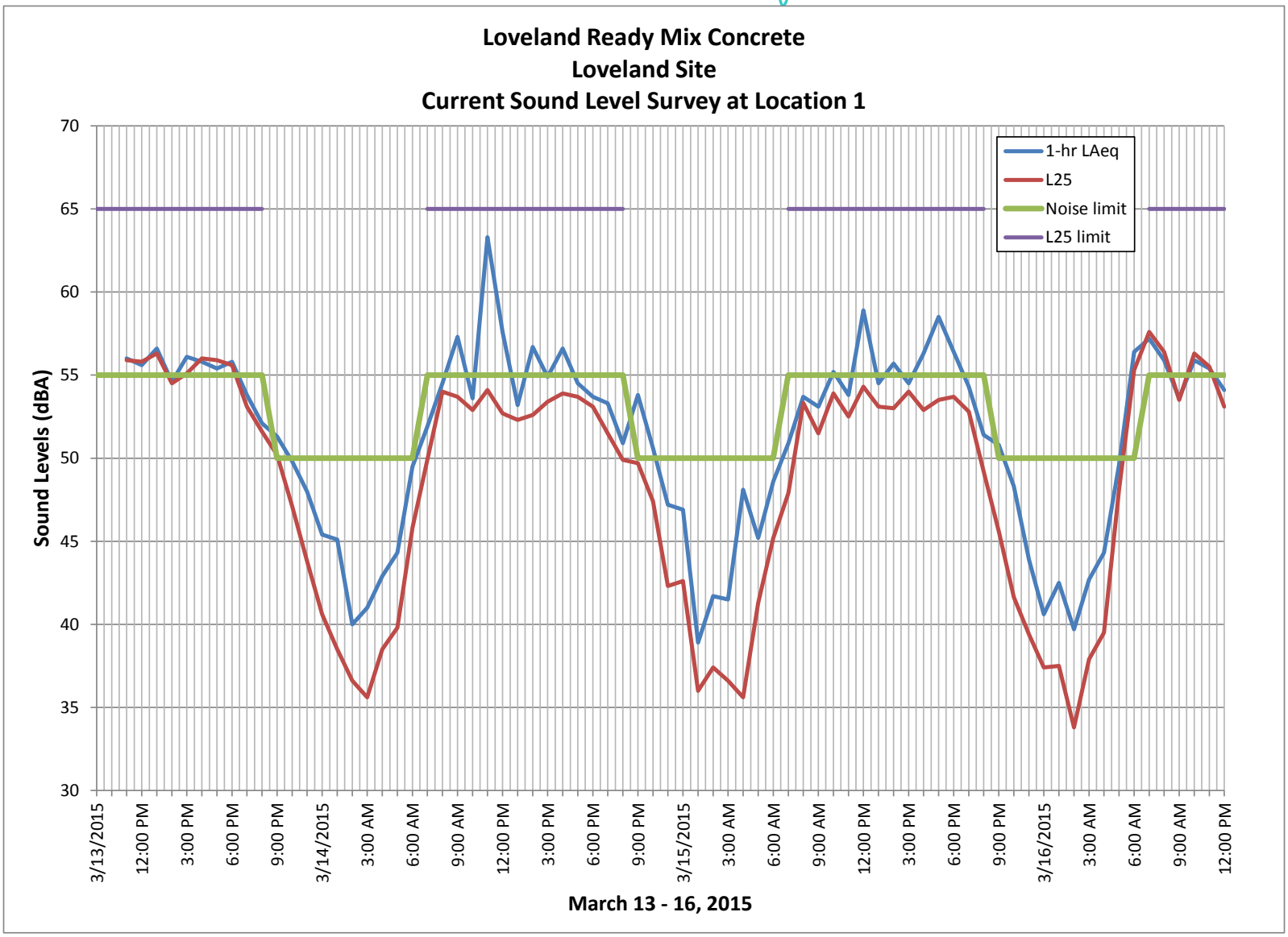



**Figure 3. Measured Hourly Ambient Sound Levels Over 4-Day Period**

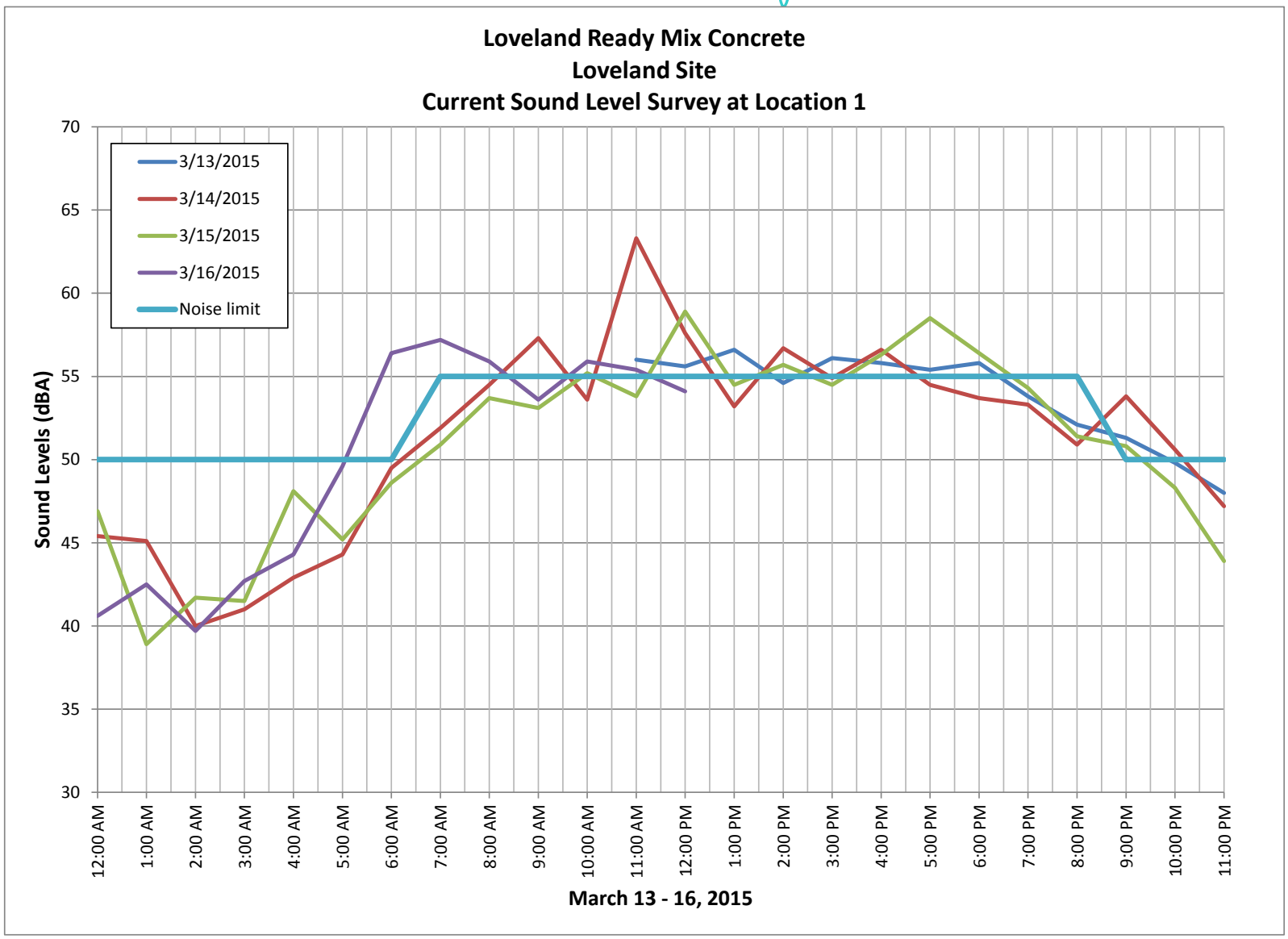



**Figure 4. 24-Hour 1-hr LAeq Overlay Ambient Sound Levels from 4 Measurement Days**

| Time | 3/13/2015 (Friday) | | 3/14/2015 (Saturday) | | 3/15/2015 (Sunday) | | 3/16/2015 (Monday) | |
|---|---|---|---|---|---|---|---|---|
| | 1-hr LAeq | L25 | 1-hr LAeq | L25 | 1-hr LAeq | L25 | 1-hr LAeq | L25 |
| 12:00 AM | | | 43.4 | 43.7 | 45.7 | 43.6 | 39.2 | 36.1 |
| 1:00 AM | | | 41.4 | 39.4 | 41.3 | 39.5 | 35.6 | 33.9 |
| 2:00 AM | | | 37.9 | 36.4 | 37.6 | 35.3 | 36.8 | 33.9 |
| 3:00 AM | | | 36.5 | 33.6 | 37.2 | 35.0 | 48.3 | 37.7 |
| 4:00 AM | | | 40.2 | 38.3 | 41.7 | 35.5 | 43.1 | 42.8 |
| 5:00 AM | | | 41.5 | 40.5 | 44.5 | 37.6 | 47.3 | 47.3 |
| 6:00 AM | | | 46.3 | 47.3 | 46.2 | 44.4 | 55.4 | 53.9 |
| 7:00 AM | | | 49.3 | 49.6 | 47.5 | 47.5 | 55.4 | 55.3 |
| 8:00 AM | | | 48.2 | 48.2 | 48.5 | 48.2 | 58.6 | 58.1 |
| 9:00 AM | | | 48.0 | 47.3 | 48.0 | 45.9 | 50.2 | 48.8 |
| 10:00 AM | 58.8 | 47.9 | 49.6 | 49.4 | 54.0 | 47.2 | 52.1 | 47.7 |
| 11:00 AM | 50.4 | 47.1 | 51.4 | 50.2 | 49.2 | 47.2 | 52.6 | 48.0 |
| 12:00 PM | 50.9 | 47.9 | 51.8 | 49.8 | 50.7 | 49.1 | 53.7 | 47.9 |
| 1:00 PM | 50.5 | 46.7 | 50.0 | 48.4 | 50.7 | 49.6 | | |
| 2:00 PM | 50.4 | 47.8 | 49.9 | 49.5 | 51.7 | 51.0 | | |
| 3:00 PM | 51.4 | 48.3 | 49.3 | 48.6 | 51.9 | 50.9 | | |
| 4:00 PM | 47.8 | 48.3 | 51.1 | 50.5 | 52.0 | 51.2 | | |
| 5:00 PM | 50.2 | 50.7 | 50.2 | 50.1 | 53.9 | 52.5 | | |
| 6:00 PM | 47.8 | 48.0 | 51.7 | 50.1 | 53.1 | 52.2 | | |
| 7:00 PM | 49.1 | 49.7 | 51.6 | 51.5 | 51.6 | 51.3 | | |
| 8:00 PM | 50.2 | 49.4 | 50.4 | 48.7 | 48.3 | 48.3 | | |
| 9:00 PM | 49.6 | 47.6 | 47.3 | 47.8 | 46.0 | 46.2 | | |
| 10:00 PM | 45.2 | 44.8 | 46.0 | 46.4 | 41.5 | 41.7 | | |
| 11:00 PM | 58.8 | 47.9 | 44.5 | 44.9 | 40.5 | 39.4 | | |

**Figure 5. Measured Ambient Sound Level Data (dBA) at Location 2**

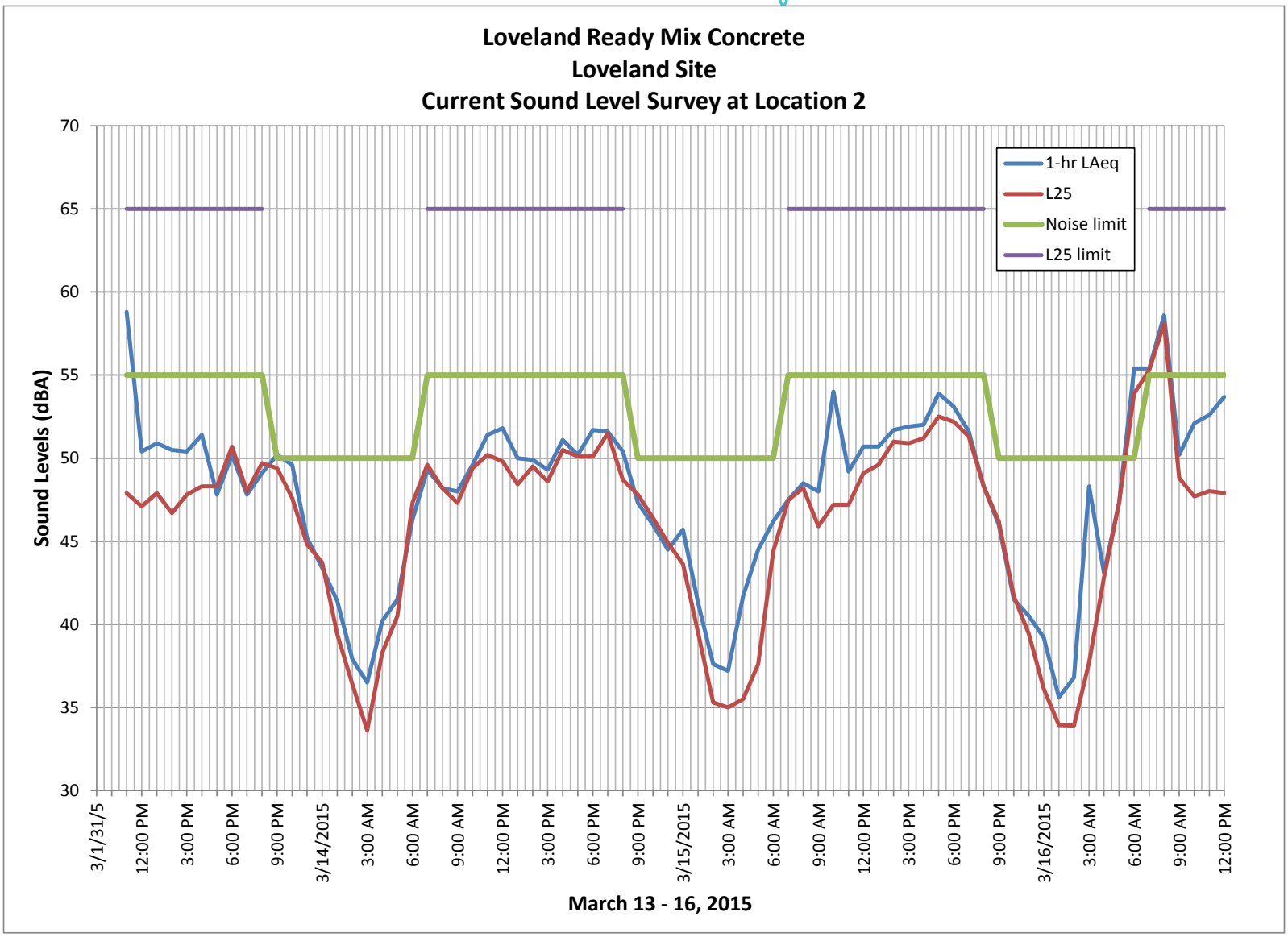



**Figure 6. Measured Hourly Ambient Sound Levels Over 4-Day Period**

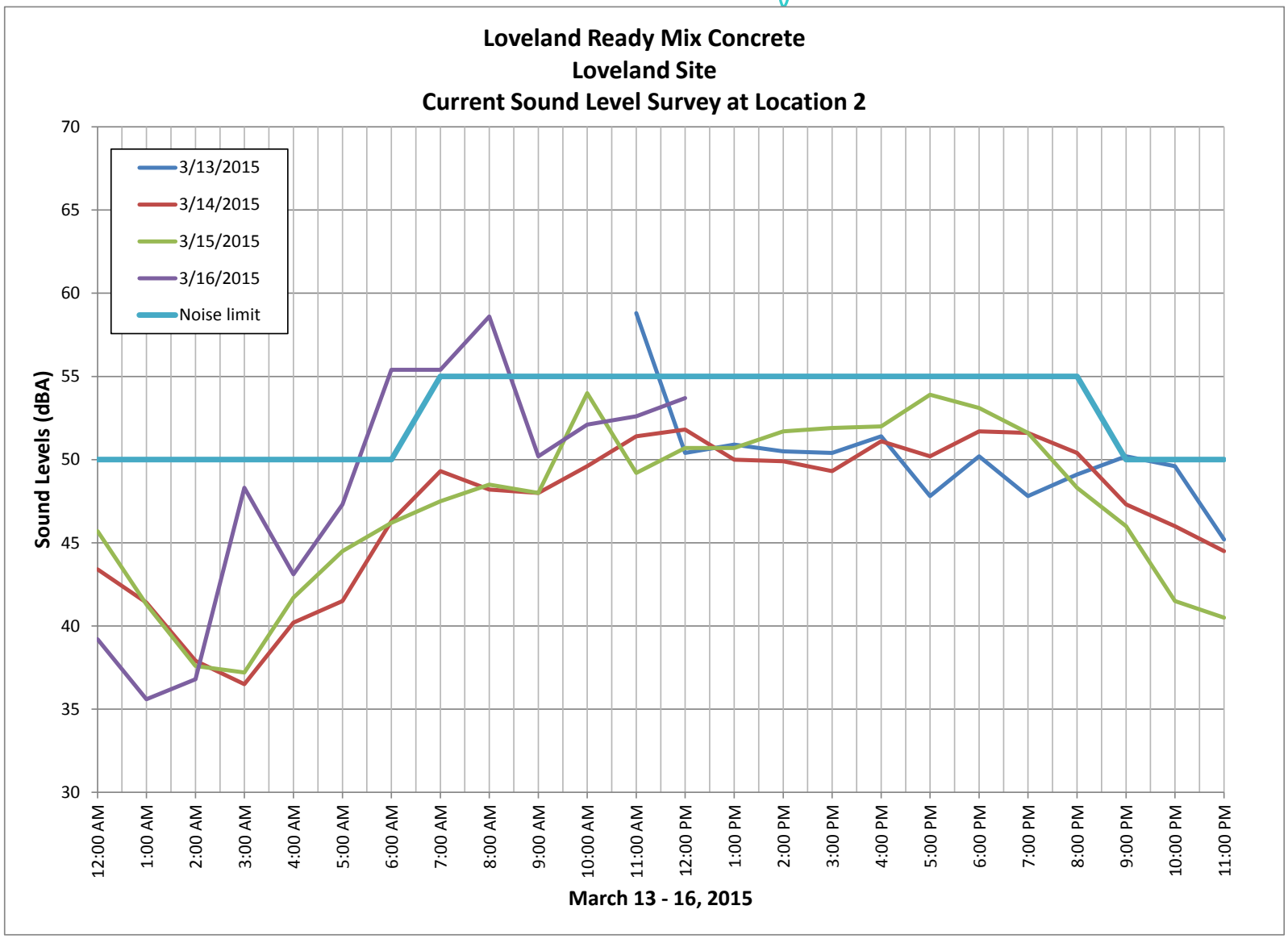



**Figure 7. 24-Hour 1-hr LAeq Overlay Ambient Sound Levels from 4 Measurement Days**

| Time | 3/13/2015 (Friday) | | 3/14/2015 (Saturday) | | 3/15/2015 (Sunday) | | 3/16/2015 (Monday) | |
|---|---|---|---|---|---|---|---|---|
| | 1-hr LAeq | L25 | 1-hr LAeq | L25 | 1-hr LAeq | L25 | 1-hr LAeq | L25 |
| 12:00 AM | | | 52.4 | 42.2 | 47.0 | 41.7 | 39.2 | 35.3 |
| 1:00 AM | | | 43.5 | 39.5 | 42.5 | 37.8 | 43.4 | 36.1 |
| 2:00 AM | | | 40.9 | 36.6 | 38.8 | 35.3 | 41.7 | 35.1 |
| 3:00 AM | | | 42.5 | 36.5 | 37.7 | 35.9 | 42.9 | 37.8 |
| 4:00 AM | | | 44.6 | 39.5 | 42.8 | 37.3 | 50.6 | 41.5 |
| 5:00 AM | | | 48.4 | 43.8 | 48.6 | 44.5 | 54.1 | 51.5 |
| 6:00 AM | | | 52.4 | 50.4 | 50.7 | 45.9 | 58.9 | 59.3 |
| 7:00 AM | | | 57.1 | 51.6 | 52.7 | 50.6 | 57.8 | 58.1 |
| 8:00 AM | | | 56.4 | 55.5 | 54.4 | 52.8 | 59.2 | 56.6 |
| 9:00 AM | | | 55.0 | 54.5 | 54.4 | 53.5 | 54.3 | 53.5 |
| 10:00 AM | | | 54.3 | 54.6 | 62.3 | 54.5 | 55.3 | 55.1 |
| 11:00 AM | 56.5 | 55.6 | 54.0 | 53.8 | 55.8 | 54.5 | 55.0 | 53.5 |
| 12:00 PM | 54.8 | 54.5 | 53.9 | 53.5 | 55.7 | 54.6 | | |
| 1:00 PM | 54.8 | 55.0 | 55.4 | 53.2 | 63.8 | 53.8 | | |
| 2:00 PM | 55.0 | 55.1 | 55.5 | 53.2 | 64.9 | 55.2 | | |
| 3:00 PM | 56.2 | 56.6 | 57.3 | 54.8 | 58.4 | 57.2 | | |
| 4:00 PM | 55.9 | 56.1 | 58.2 | 56.2 | 55.8 | 53.8 | | |
| 5:00 PM | 60.9 | 56.1 | 56.0 | 55.1 | 56.7 | 53.9 | | |
| 6:00 PM | 53.8 | 53.6 | 54.7 | 54.4 | 54.3 | 53.7 | | |
| 7:00 PM | 53.8 | 53.2 | 54.4 | 52.7 | 61.7 | 53.7 | | |
| 8:00 PM | 62.2 | 52.5 | 52.6 | 50.7 | 53.0 | 50.6 | | |
| 9:00 PM | 51.6 | 50.7 | 51.7 | 49.4 | 48.9 | 46.4 | | |
| 10:00 PM | 51.9 | 47.2 | 48.6 | 46.1 | 49.6 | 41.3 | | |
| 11:00 PM | 48.1 | 44.4 | 48.6 | 45.0 | 42.5 | 37.3 | | |

**Figure 8. Measured Ambient Sound Level Data (dBA) at Location 3**

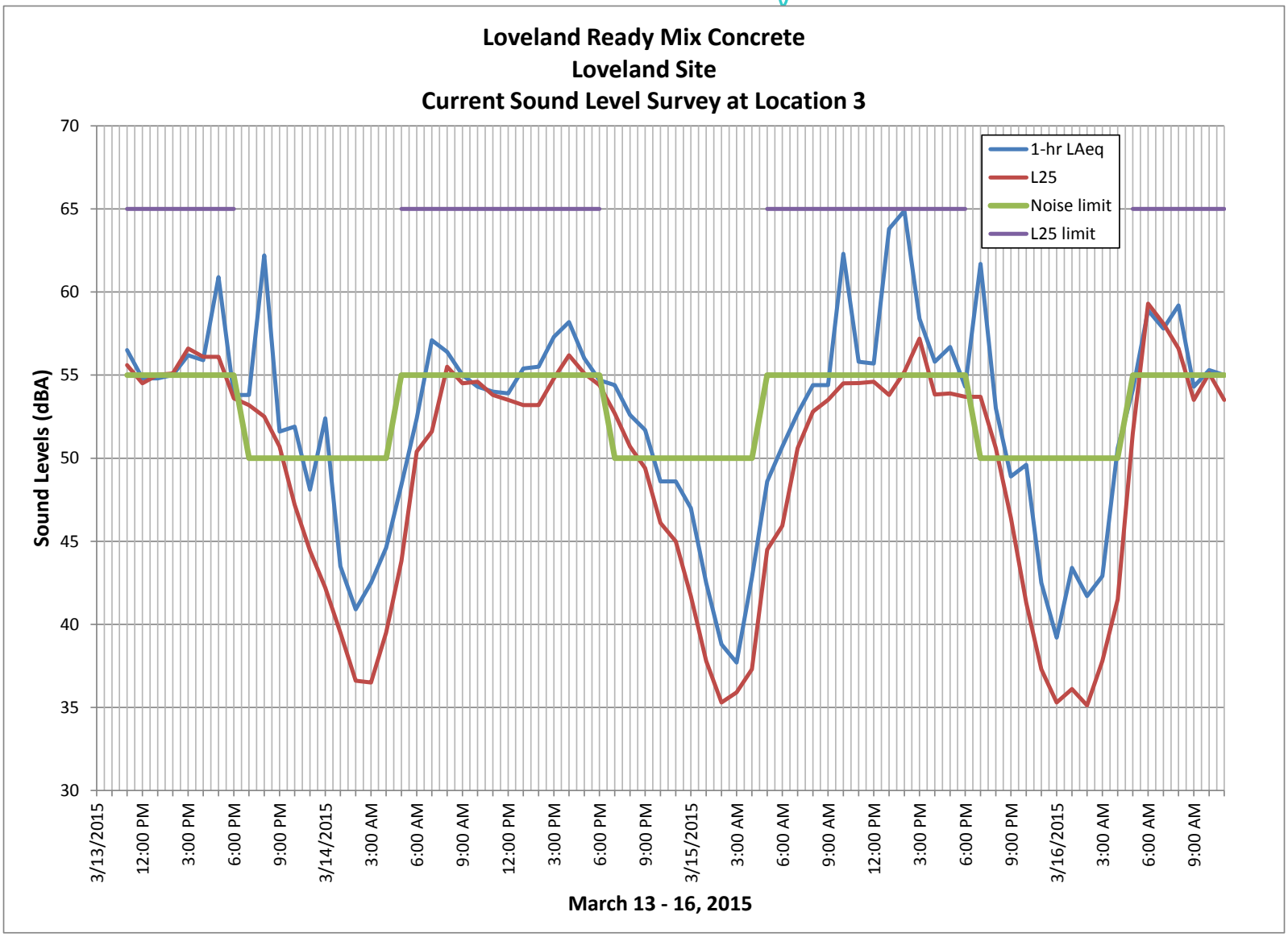



**Figure 9. Measured Hourly Ambient Sound Levels Over 4-Day Period**

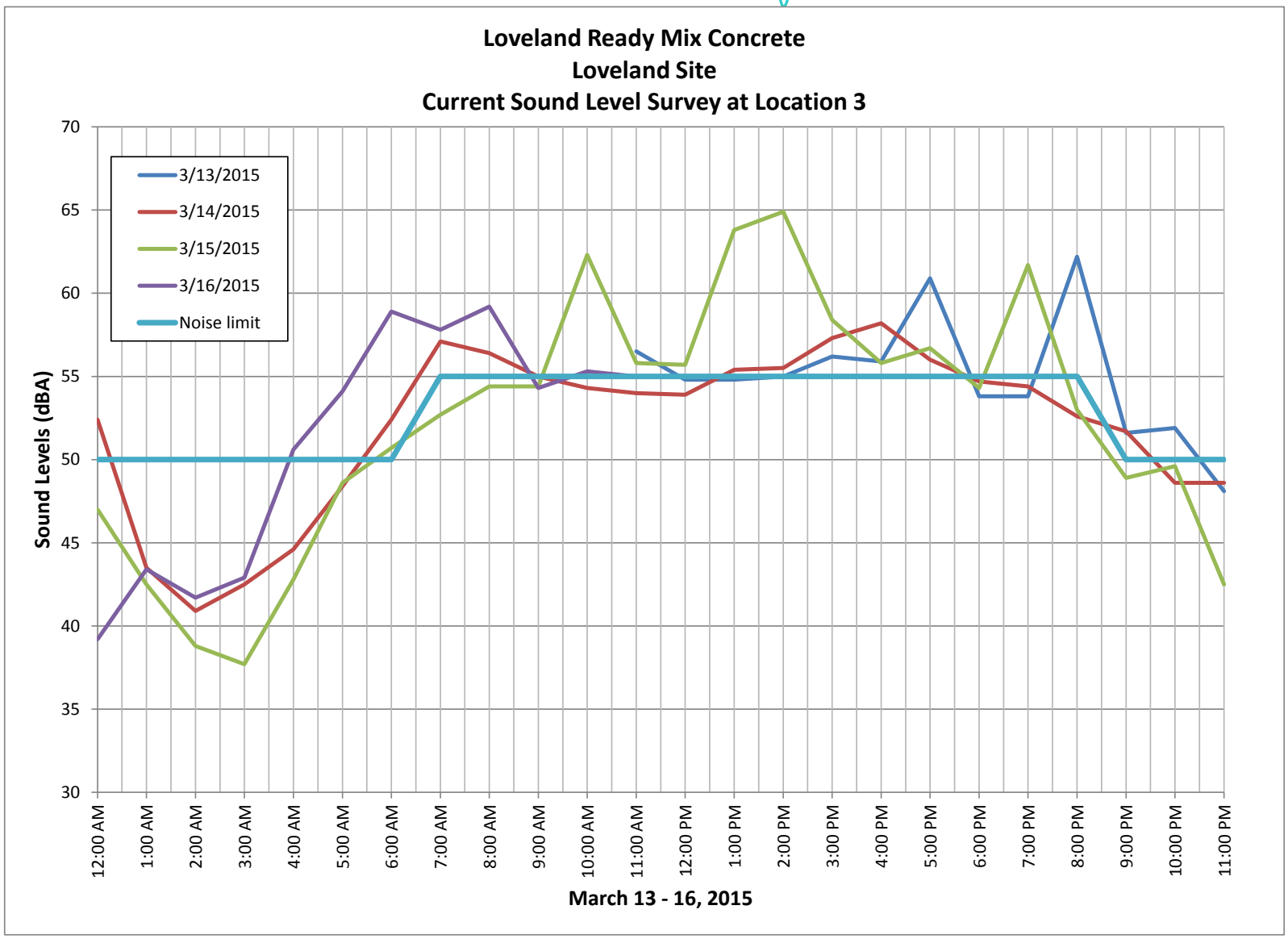



**Figure 10. 24-Hour 1-hr LAeq Overlay Ambient Sound Levels from 4 Measurement Days**

| Time | 3/13/2015 (Friday) | | 3/14/2015 (Saturday) | | 3/15/2015 (Sunday) | | 3/16/2015 (Monday) | |
|---|---|---|---|---|---|---|---|---|
| | 1-hr LAeq | L25 | 1-hr LAeq | L25 | 1-hr LAeq | L25 | 1-hr LAeq | L25 |
| 12:00 AM | | | 49.2 | 46.4 | 48.9 | 48.0 | 47.0 | 42.7 |
| 1:00 AM | | | 54.0 | 44.8 | 48.2 | 43.1 | 45.5 | 41.1 |
| 2:00 AM | | | 42.6 | 41.6 | 43.6 | 42.2 | 41.4 | 37.0 |
| 3:00 AM | | | 40.4 | 36.4 | 43.3 | 39.7 | 45.0 | 43.3 |
| 4:00 AM | | | 45.2 | 42.4 | 48.7 | 39.8 | 46.6 | 45.4 |
| 5:00 AM | | | 47.0 | 46.0 | 49.2 | 44.6 | 53.8 | 52.9 |
| 6:00 AM | | | 51.4 | 51.1 | 48.8 | 49.0 | 57.8 | 57.8 |
| 7:00 AM | | | 64.8 | 54.5 | 52.3 | 51.9 | 59.5 | 59.6 |
| 8:00 AM | | | 57.5 | 54.7 | 53.8 | 53.9 | 57.8 | 57.4 |
| 9:00 AM | | | 55.8 | 55.8 | 55.5 | 54.9 | 56.2 | 54.9 |
| 10:00 AM | | | 55.9 | 54.9 | 57.2 | 56.5 | 56.9 | 56.5 |
| 11:00 AM | 59.4 | 57.8 | 57.8 | 55.6 | 56.8 | 55.9 | 56.7 | 56.2 |
| 12:00 PM | 57.2 | 56.9 | 59.0 | 56.1 | 58.8 | 56.5 | 56.7 | 54.7 |
| 1:00 PM | 56.3 | 55.8 | 58.0 | 54.7 | 60.5 | 56.0 | | |
| 2:00 PM | 58.1 | 56.3 | 58.2 | 56.3 | 59.5 | 56.8 | | |
| 3:00 PM | 57.3 | 57.2 | 57.3 | 55.3 | 59.9 | 57.9 | | |
| 4:00 PM | 58.3 | 57.7 | 60.0 | 56.6 | 58.1 | 56.1 | | |
| 5:00 PM | 56.1 | 56.3 | 58.1 | 56.0 | 60.9 | 56.4 | | |
| 6:00 PM | 57.8 | 57.4 | 56.3 | 55.5 | 59.5 | 56.4 | | |
| 7:00 PM | 56.8 | 56.4 | 57.4 | 55.8 | 57.8 | 56.0 | | |
| 8:00 PM | 57.2 | 55.0 | 56.7 | 54.3 | 57.1 | 53.8 | | |
| 9:00 PM | 65.7 | 54.6 | 53.9 | 53.7 | 52.8 | 50.8 | | |
| 10:00 PM | 51.2 | 50.4 | 52.5 | 51.6 | 48.9 | 47.2 | | |
| 11:00 PM | 51.3 | 48.8 | 48.9 | 48.6 | 55.0 | 45.4 | | |

**Figure 11. Measured Ambient Sound Level Data (dBA) at Location 4**

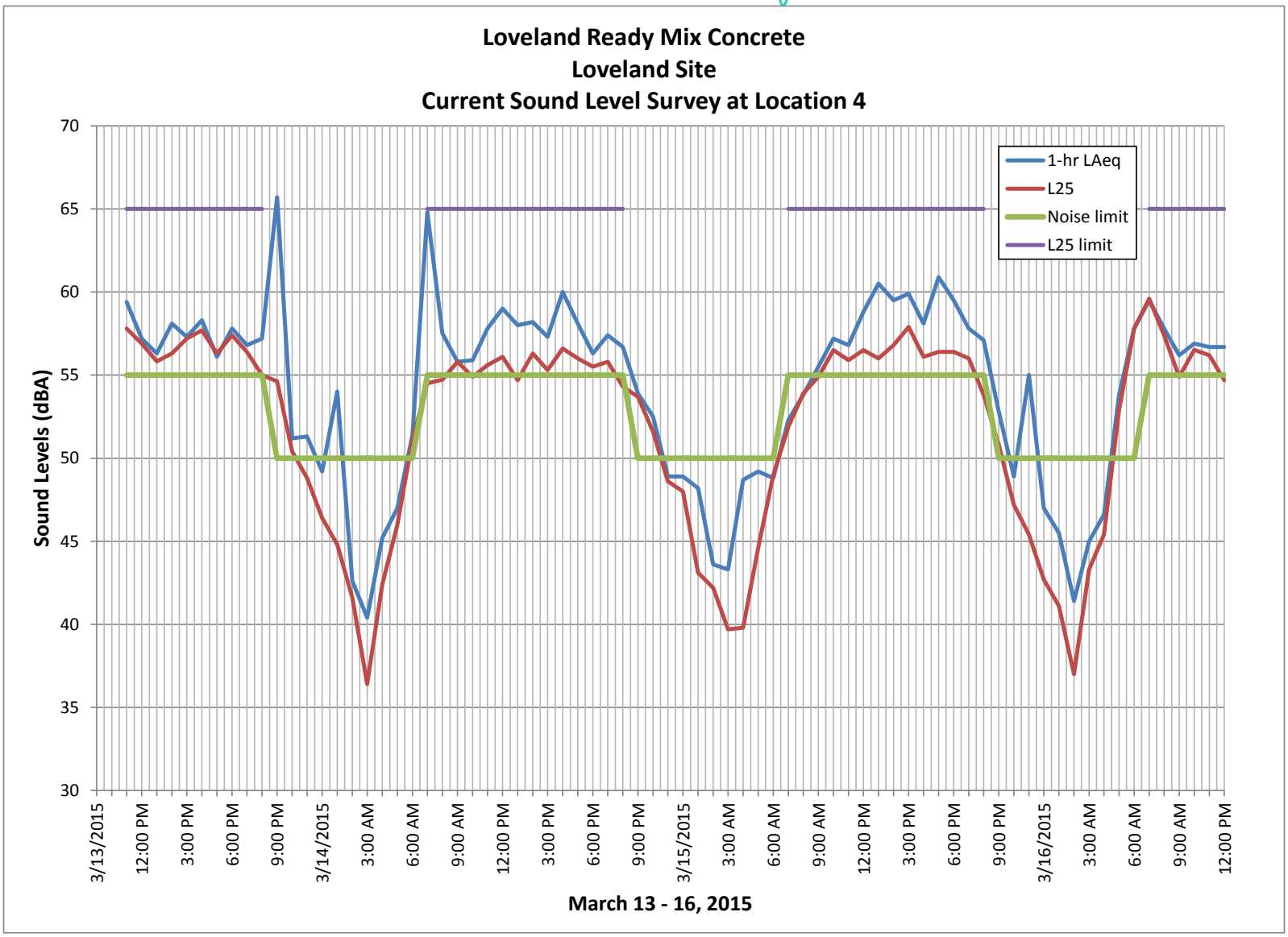



**Figure 12. Measured Hourly Ambient Sound Levels Over 4-Day Period**

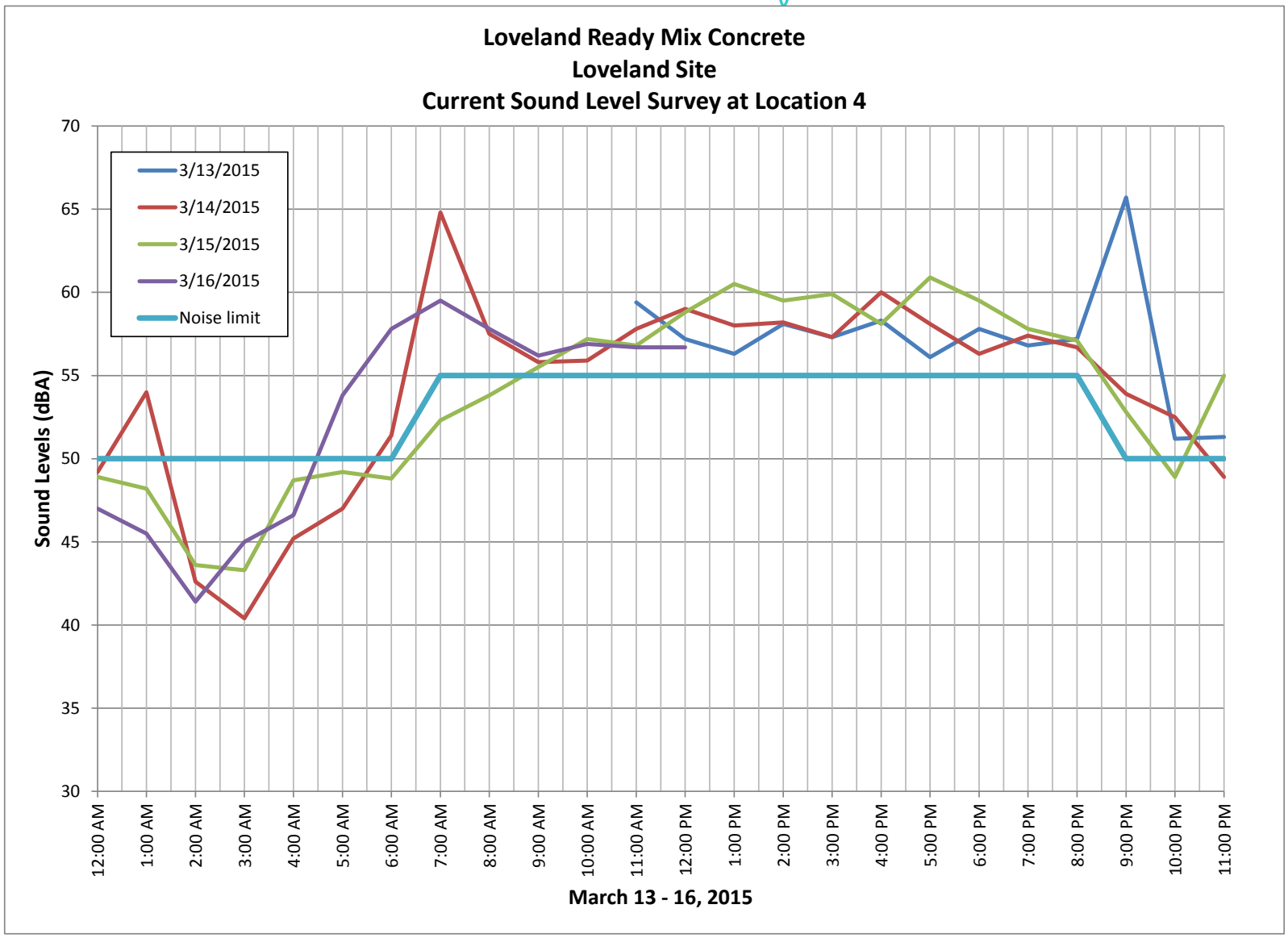



**Figure 13. 24-Hour 1-hr LAeq Overlay Ambient Sound Levels from 4 Measurement Days**

| Time | 3/6/2015 (Friday) | 3/7/2015 (Saturday) | 3/8/2015 (Sunday) | 3/9/2015 (Monday) |
|---|---|---|---|---|
| **12:00 AM** | | 60.2 | 58.7 | 53.9 |
| **1:00 AM** | | 57.4 | 61.2 | 50.5 |
| **2:00 AM** | | 56.5 | 55.7 | 51.1 |
| **3:00 AM** | | 53.8 | 53.0 | 44.6 |
| **4:00 AM** | | 51.2 | 50.6 | 47.5 |
| **5:00 AM** | | 51.2 | 51.9 | 52.0 |
| **6:00 AM** | | 50.5 | 52.8 | 59.1 |
| **7:00 AM** | | 56.3 | 56.7 | 62.7 |
| **8:00 AM** | | 58.4 | 57.6 | 66.8 |
| **9:00 AM** | | 68.4 | 60.8 | 66.6 |
| **10:00 AM** | | 63.6 | 61.1 | 62.6 |
| **11:00 AM** | | 62.5 | 64.6 | 62.2 |
| **12:00 PM** | | 65.1 | 61.4 | 60.9 |
| **1:00 PM** | | 62.1 | 64.1 | 61.1 |
| **2:00 PM** | 67.2 | 62.2 | 61.6 | 61.4 |
| **3:00 PM** | 61.8 | 62.0 | 61.6 | 60.9 |
| **4:00 PM** | 62.2 | 63.2 | 61.9 | |
| **5:00 PM** | 67.3 | 62.1 | 63.2 | |
| **6:00 PM** | 68.9 | 62.9 | 62.1 | |
| **7:00 PM** | 65.1 | 69.0 | 61.2 | |
| **8:00 PM** | 64.8 | 63.3 | 60.7 | |
| **9:00 PM** | 65.4 | 62.7 | 60.2 | |
| **10:00 PM** | 61.0 | 60.9 | 58.9 | |
| **11:00 PM** | 67.5 | 59.9 | 56.0 | |

**Figure 14. Measured Ambient Sound Level Data (dBA) at Location 5**

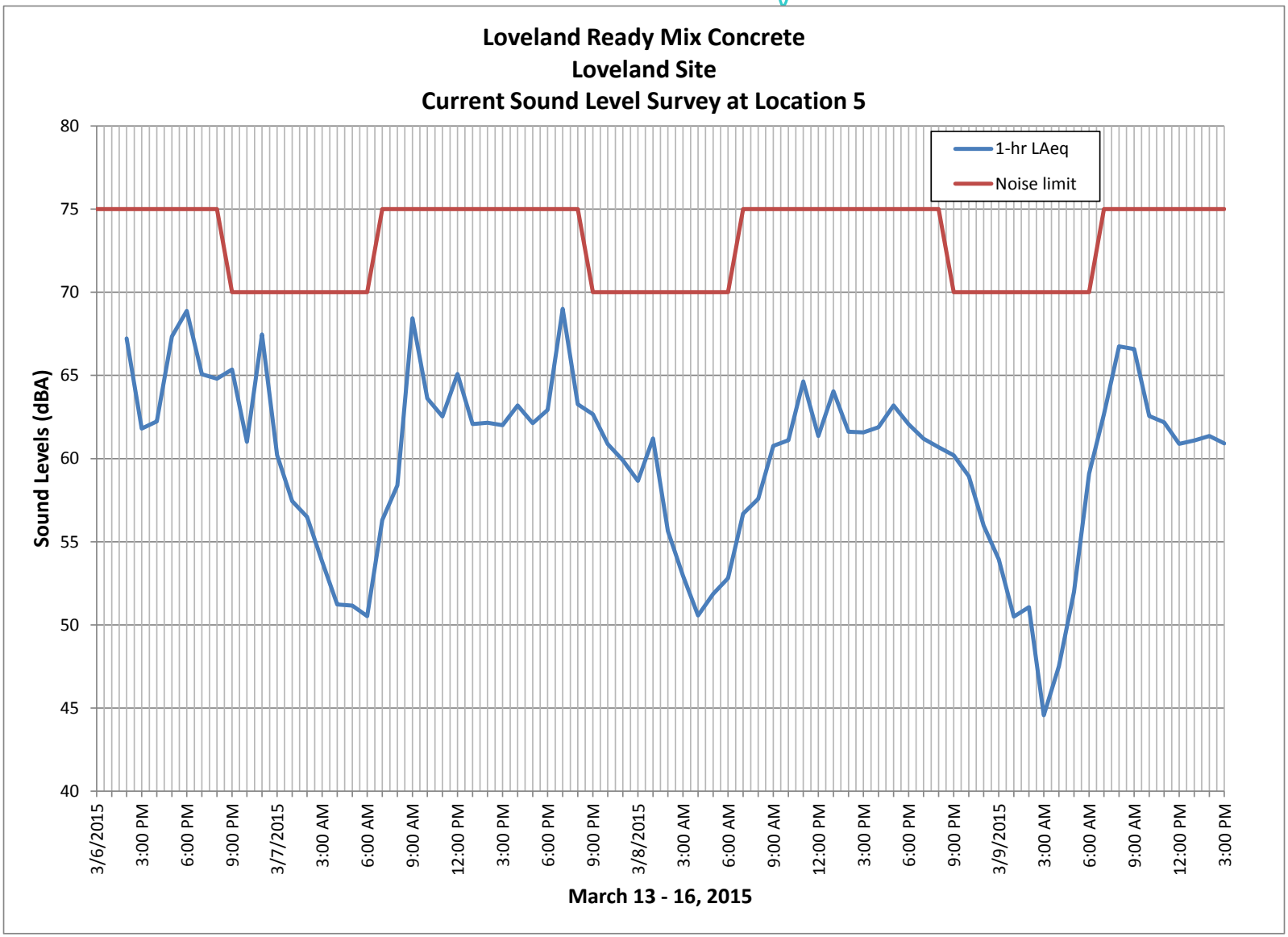



**Figure 15. Measured Hourly Ambient Sound Levels Over 4-Day Period**

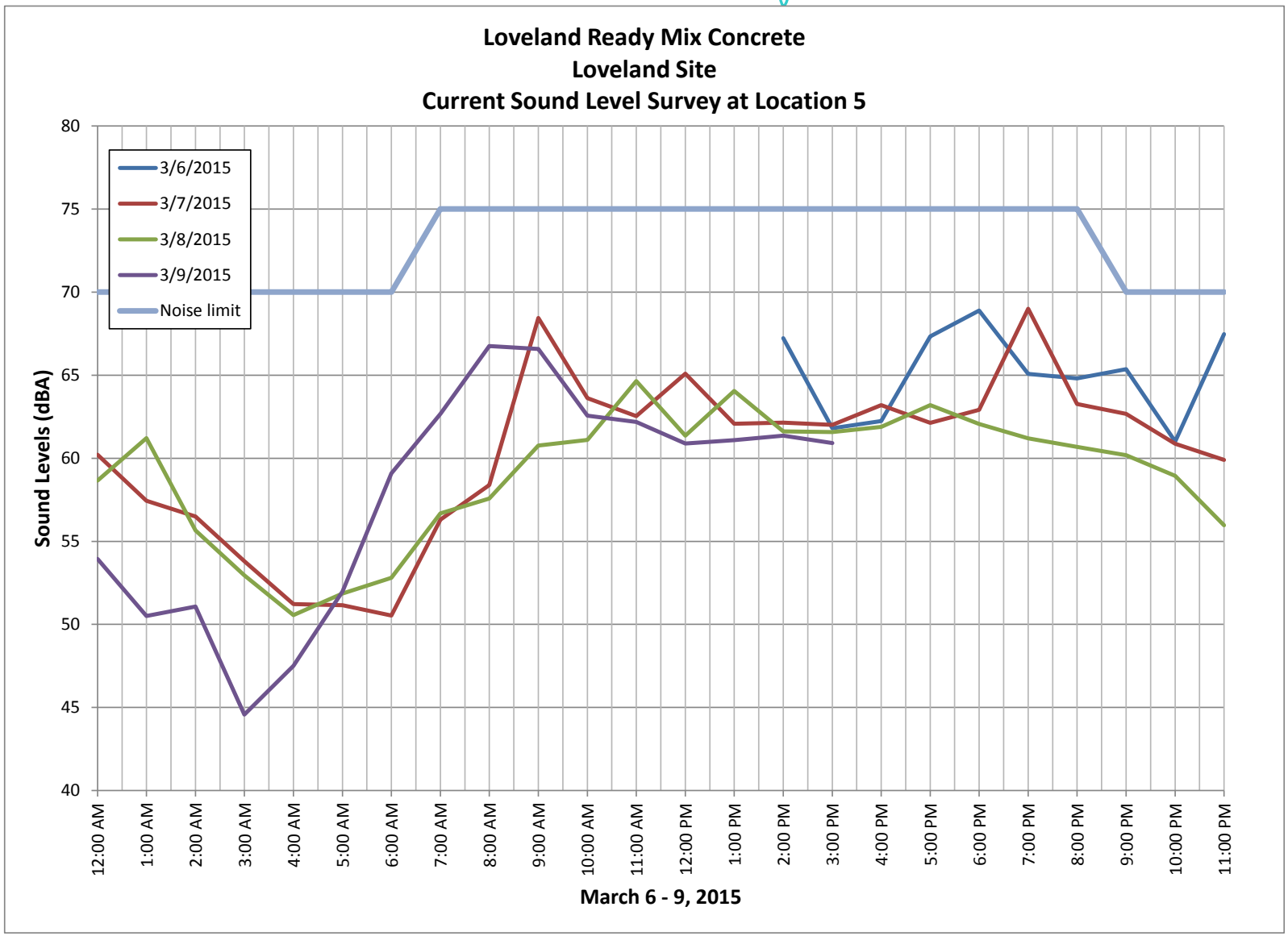
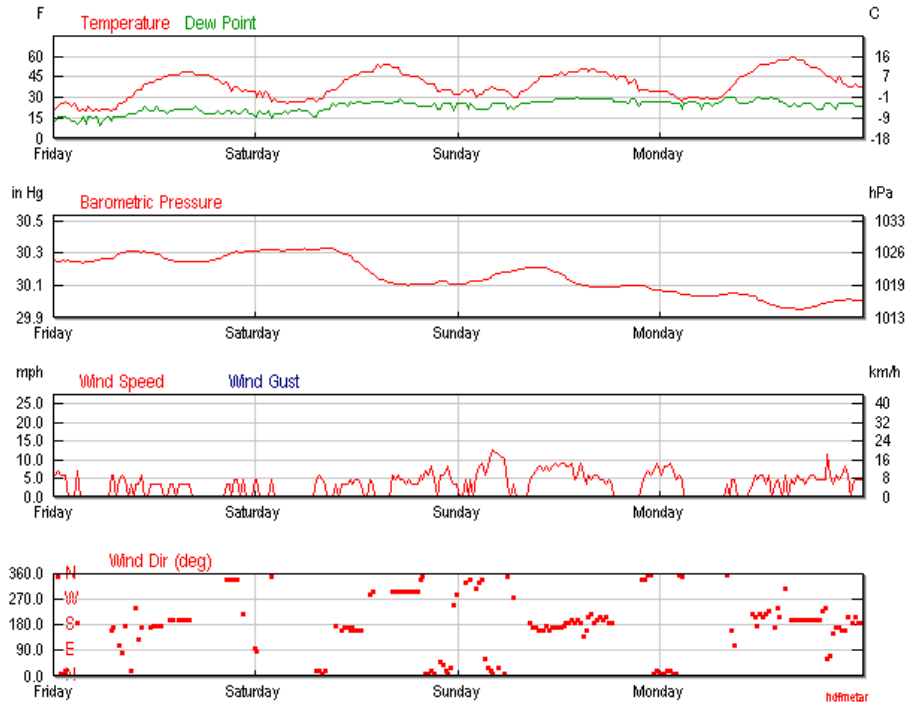
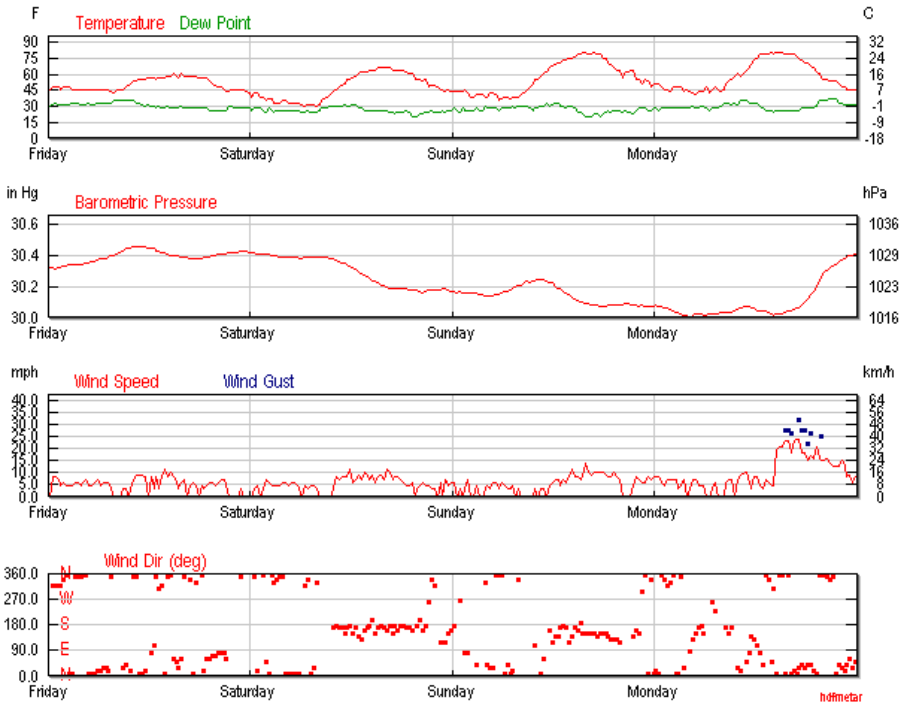



**Figure 16. 24-Hour 1-hr LAeq Overlay Ambient Sound Levels from 4 Measurement Days**




March 6-9, 2015




March 13-16, 2015

**Figure 17. Weather Reports**


**Figure 18. Three Scenario Locations of Scraping and Mining Operations**

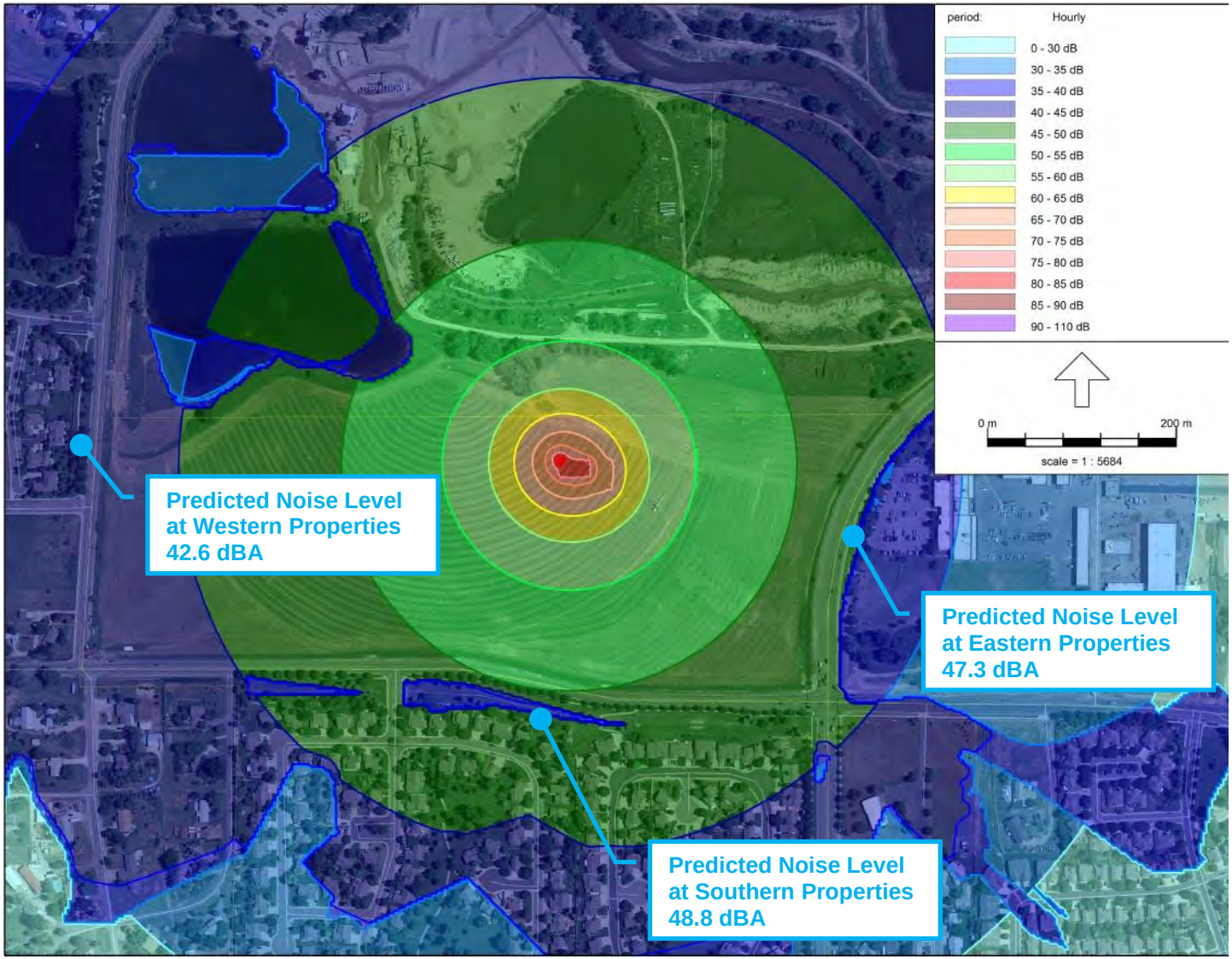



**Figure 19. Unmitigated Scraping Operation at Western Location Noise Contour Map**

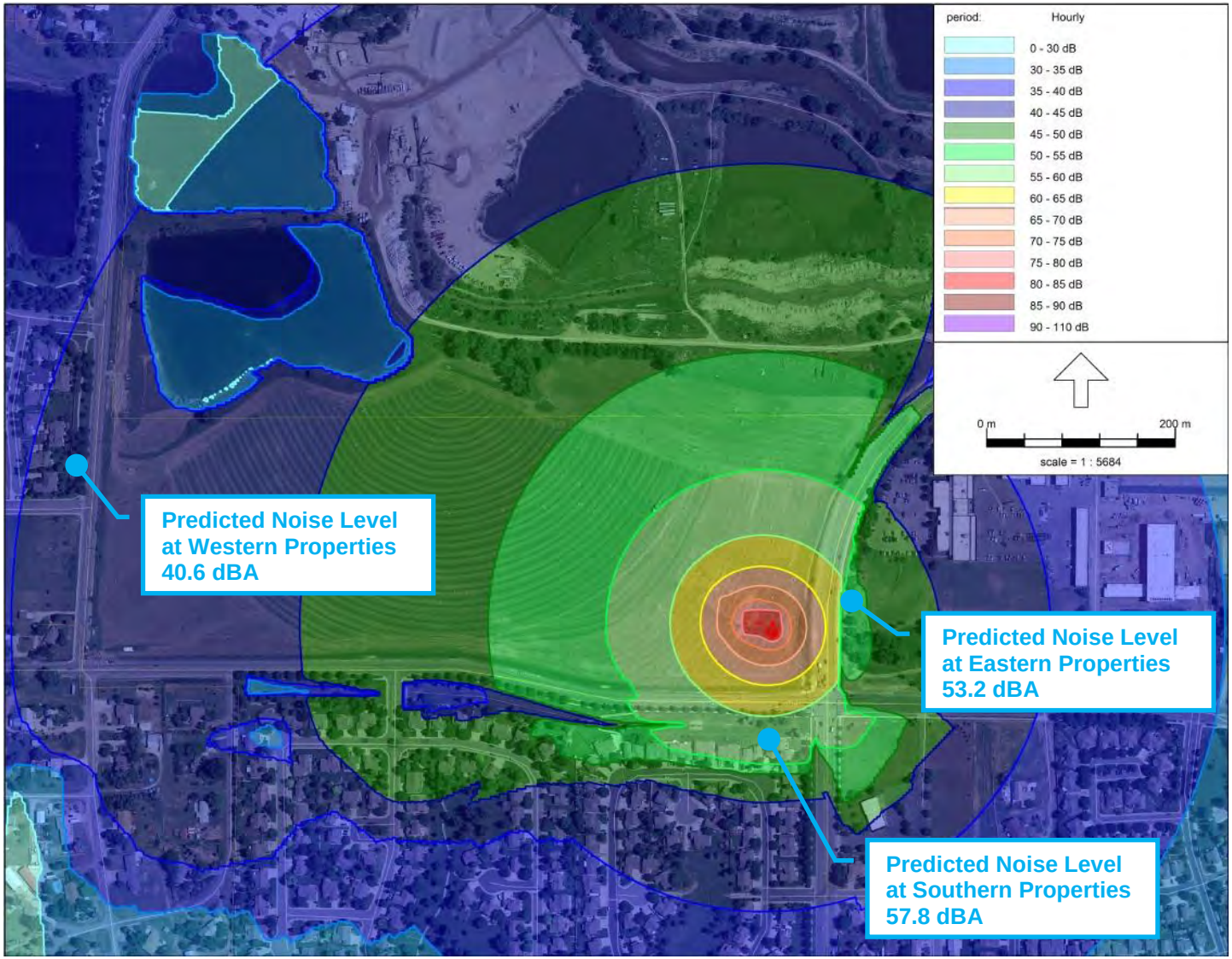



**Figure 20. Unmitigated Scraping Operation at Southern Location Noise Contour Map**

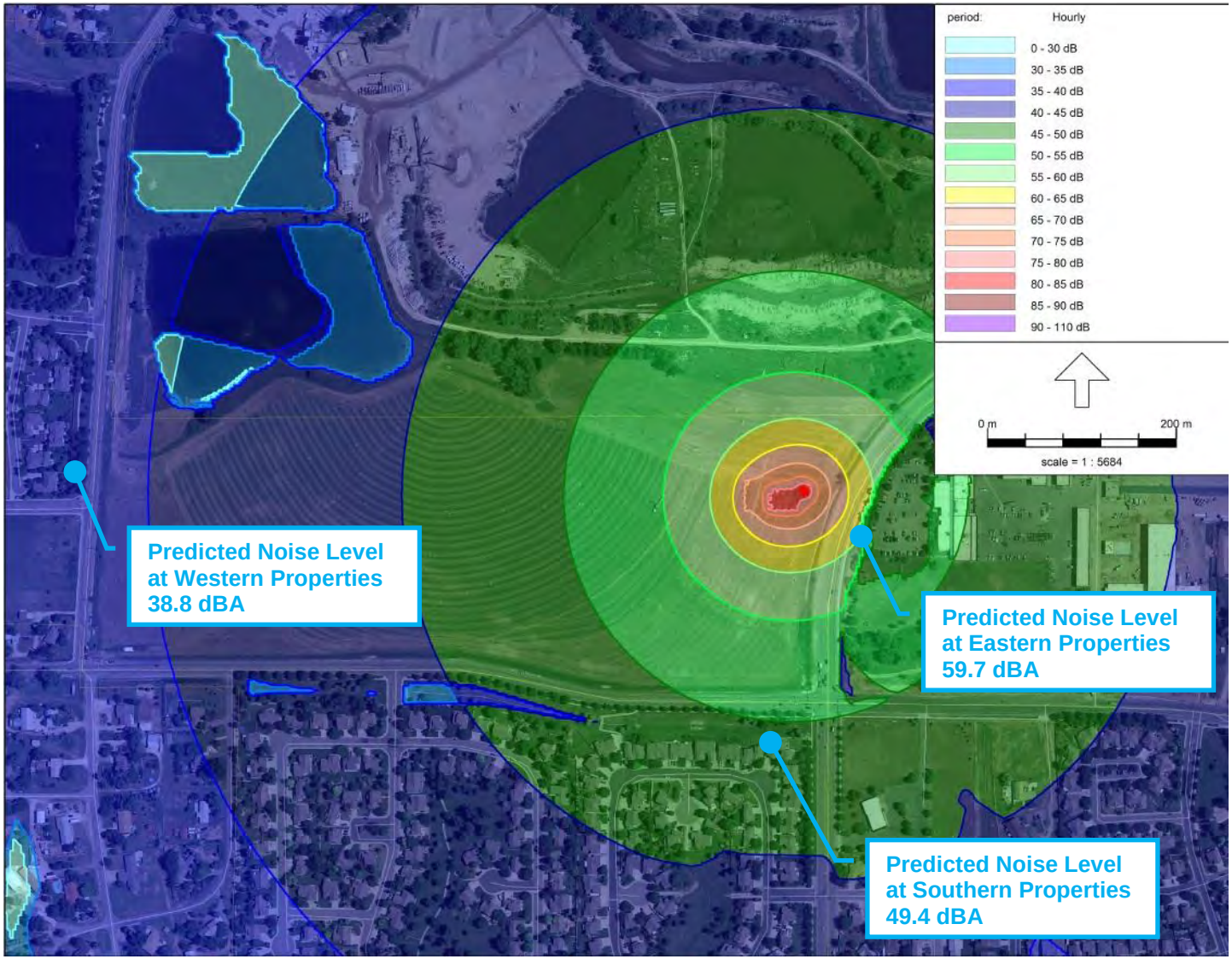



**Figure 21. Unmitigated Scraping Operation at Eastern Location Noise Contour Map**

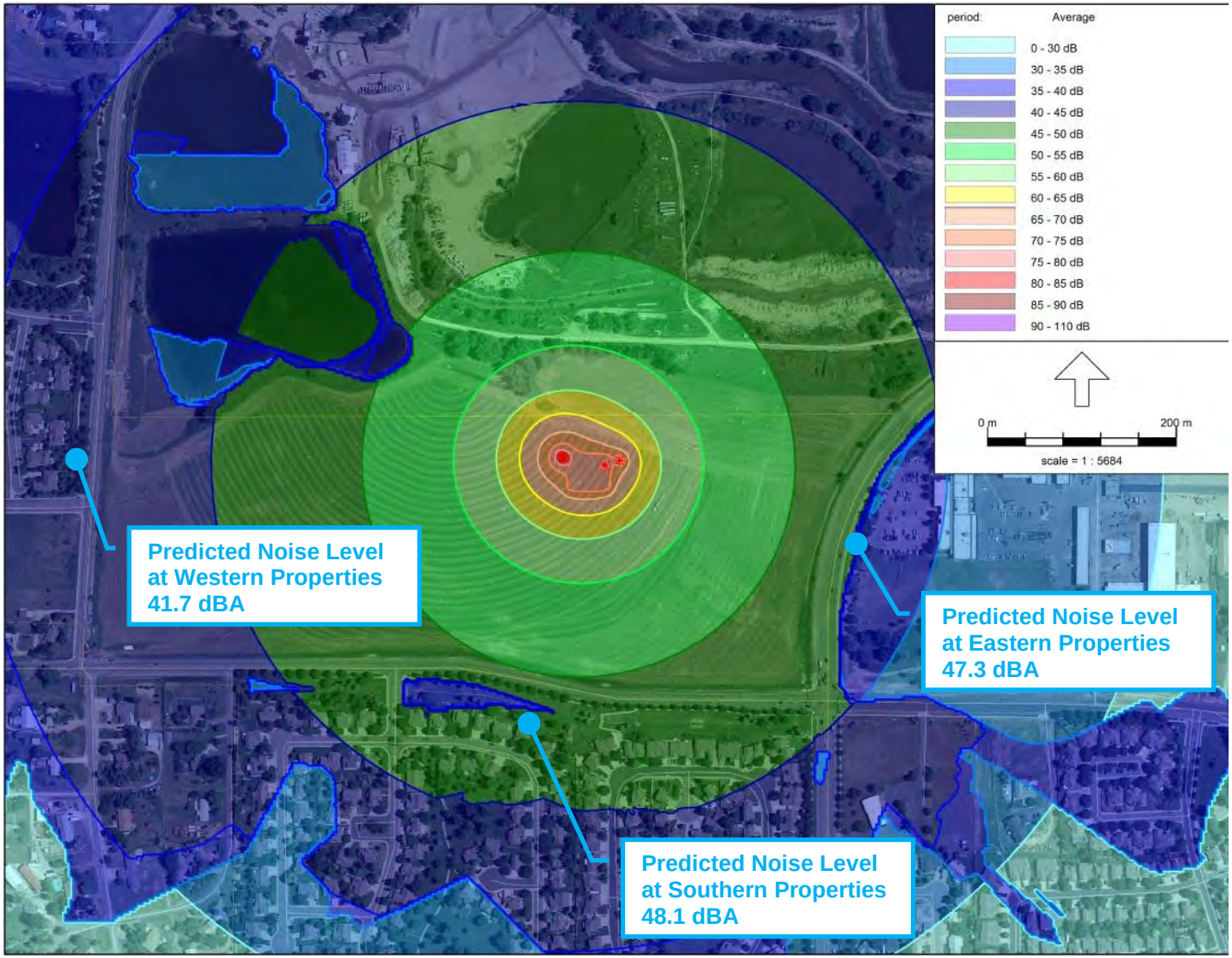



**Figure 22. Unmitigated Mining Operation at Western Location Noise Contour Map**

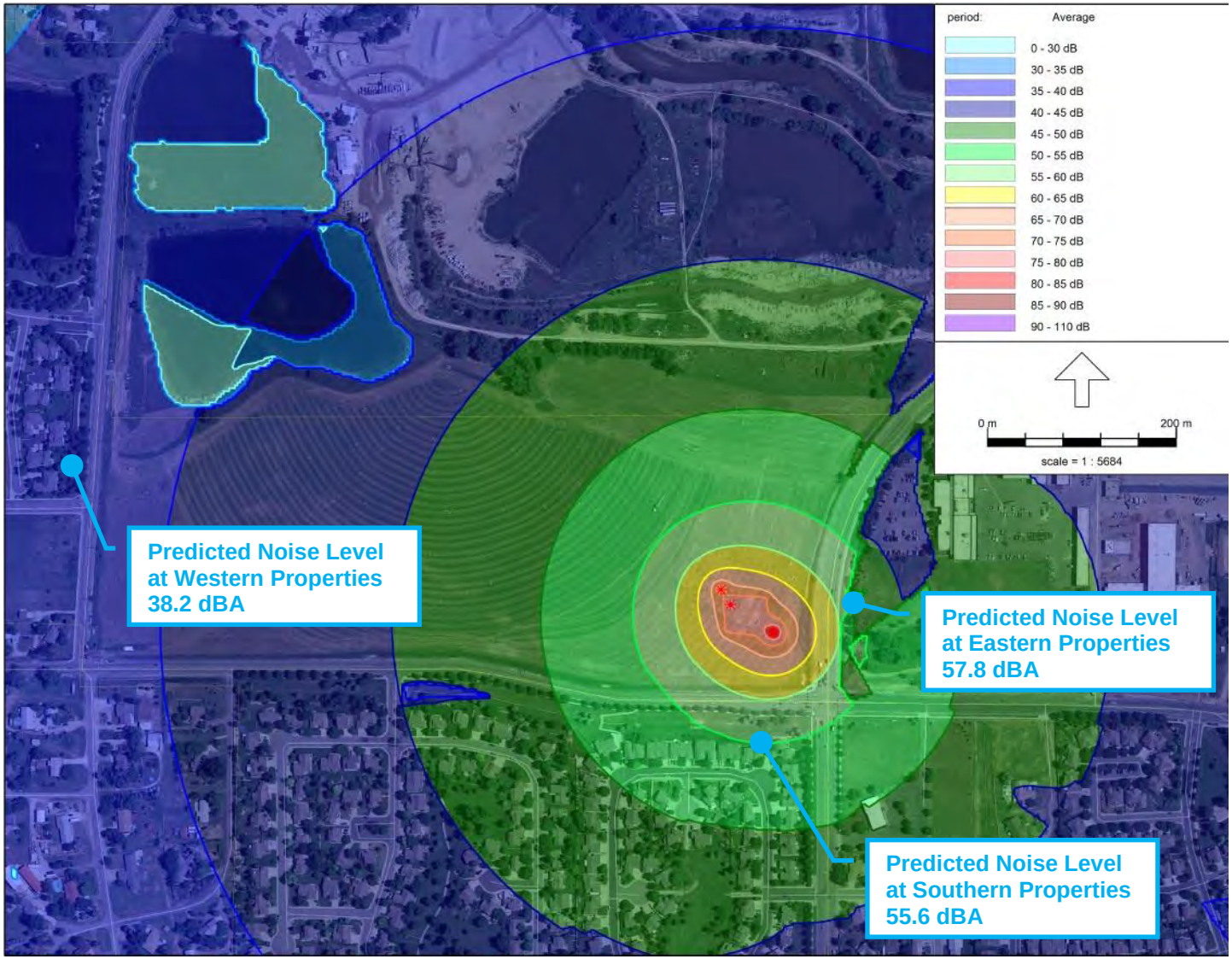



**Figure 23. Unmitigated Mining Operation at Southern Location Noise Contour Map**

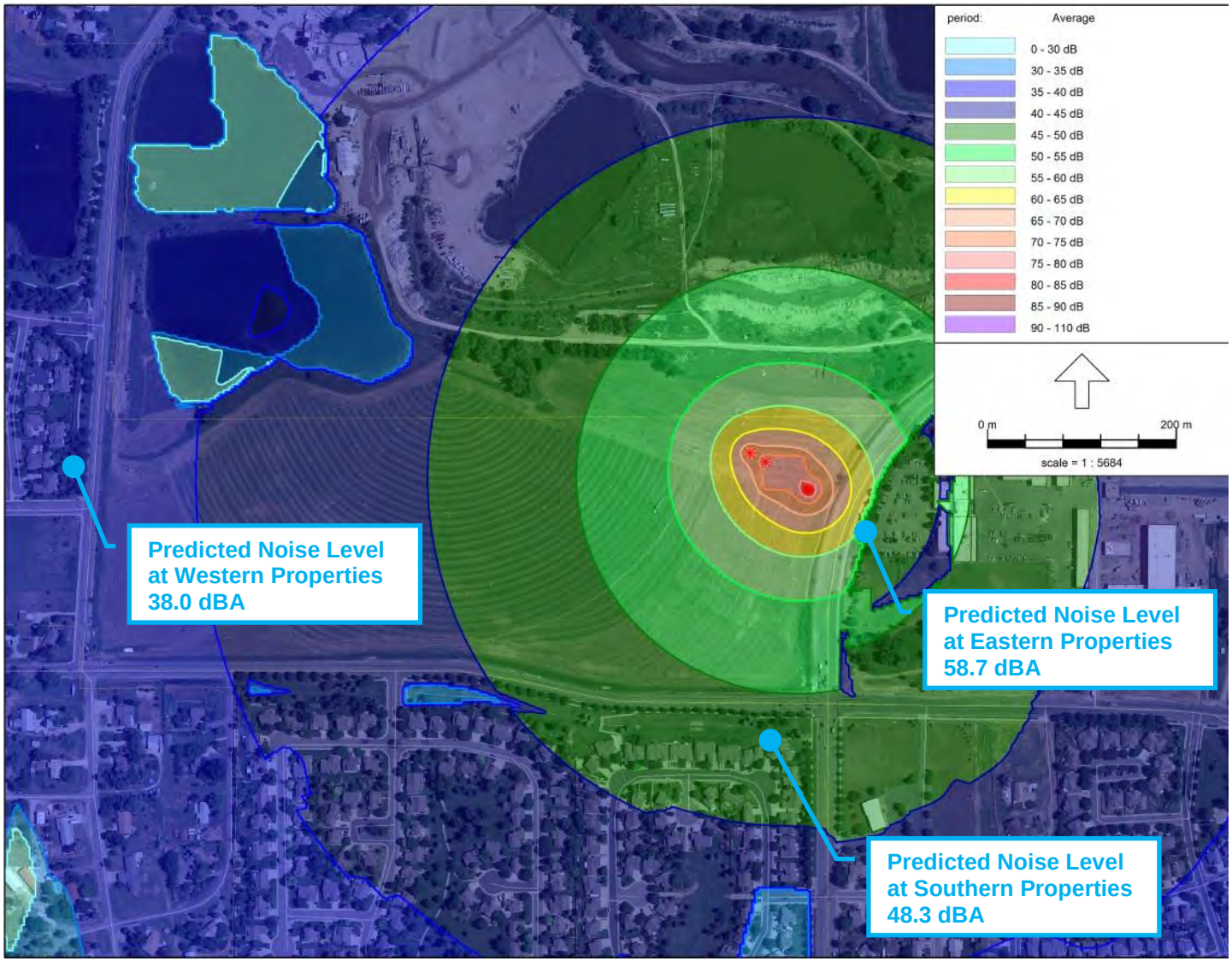



**Figure 24. Unmitigated Mining Operation at Eastern Location Noise Contour Map**


**Figure 25. Three Scenario Locations of Scraping and Mining Operations and Locations of Stockpile and Landscaping Berm**

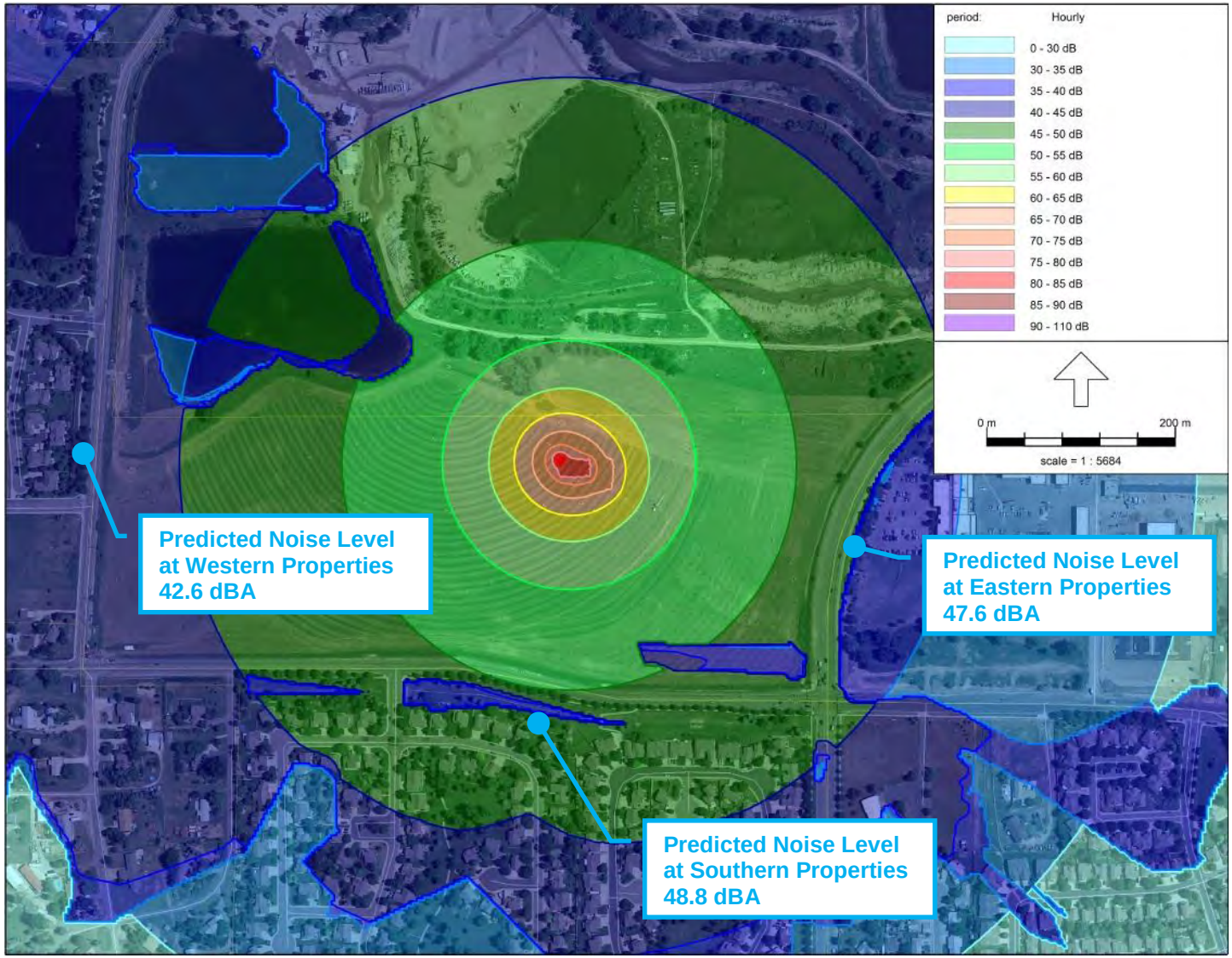



**Figure 26. Mitigated Scraping Operation at Eastern Location Noise Contour Map**

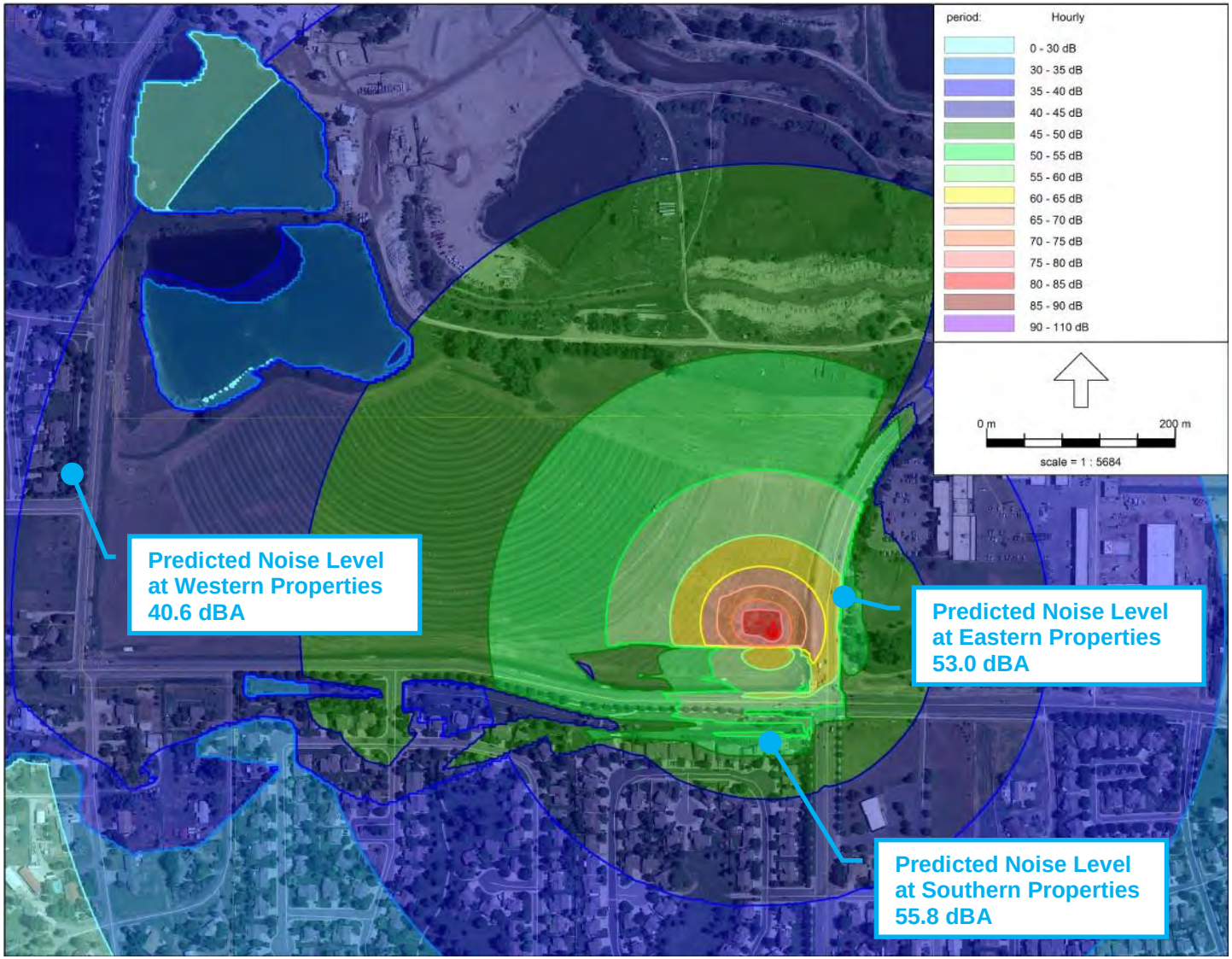



**Figure 26. Mitigated Scraping Operation at Southern Location Noise Contour Map**

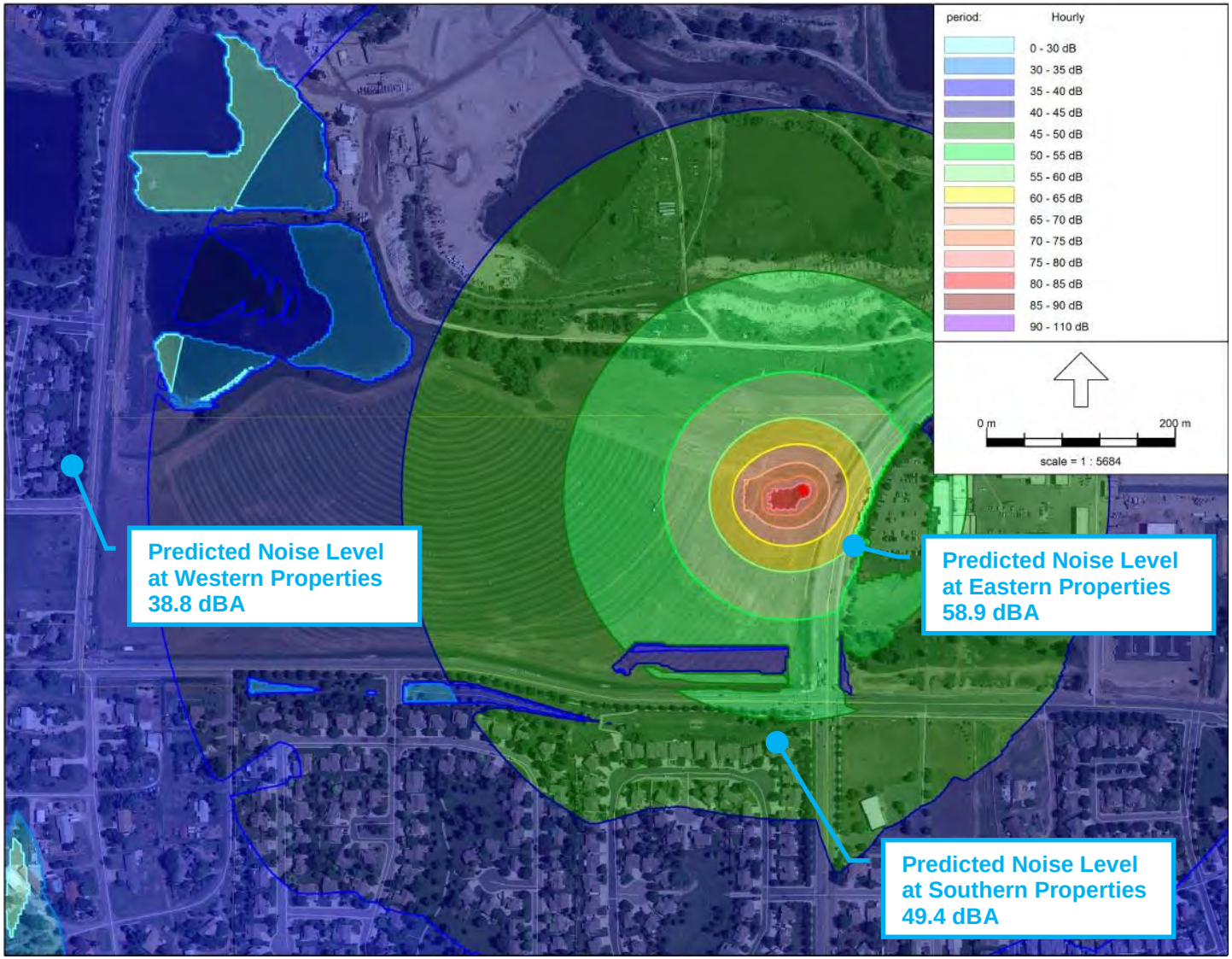



**Figure 26. Mitigated Scraping Operation at Eastern Location Noise Contour Map**

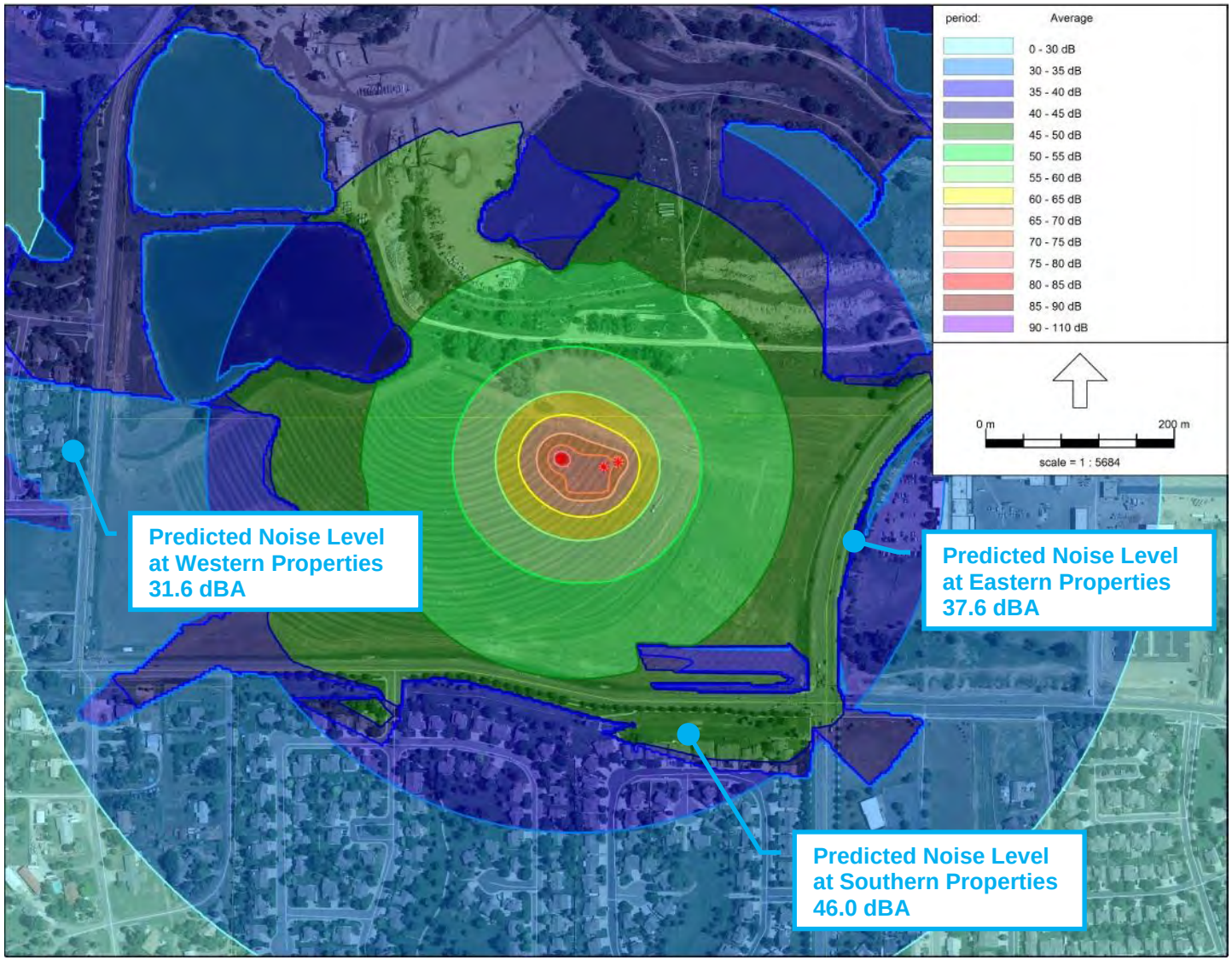



**Figure 26. Mitigated Mining Operation at Eastern Location Noise Contour Map**

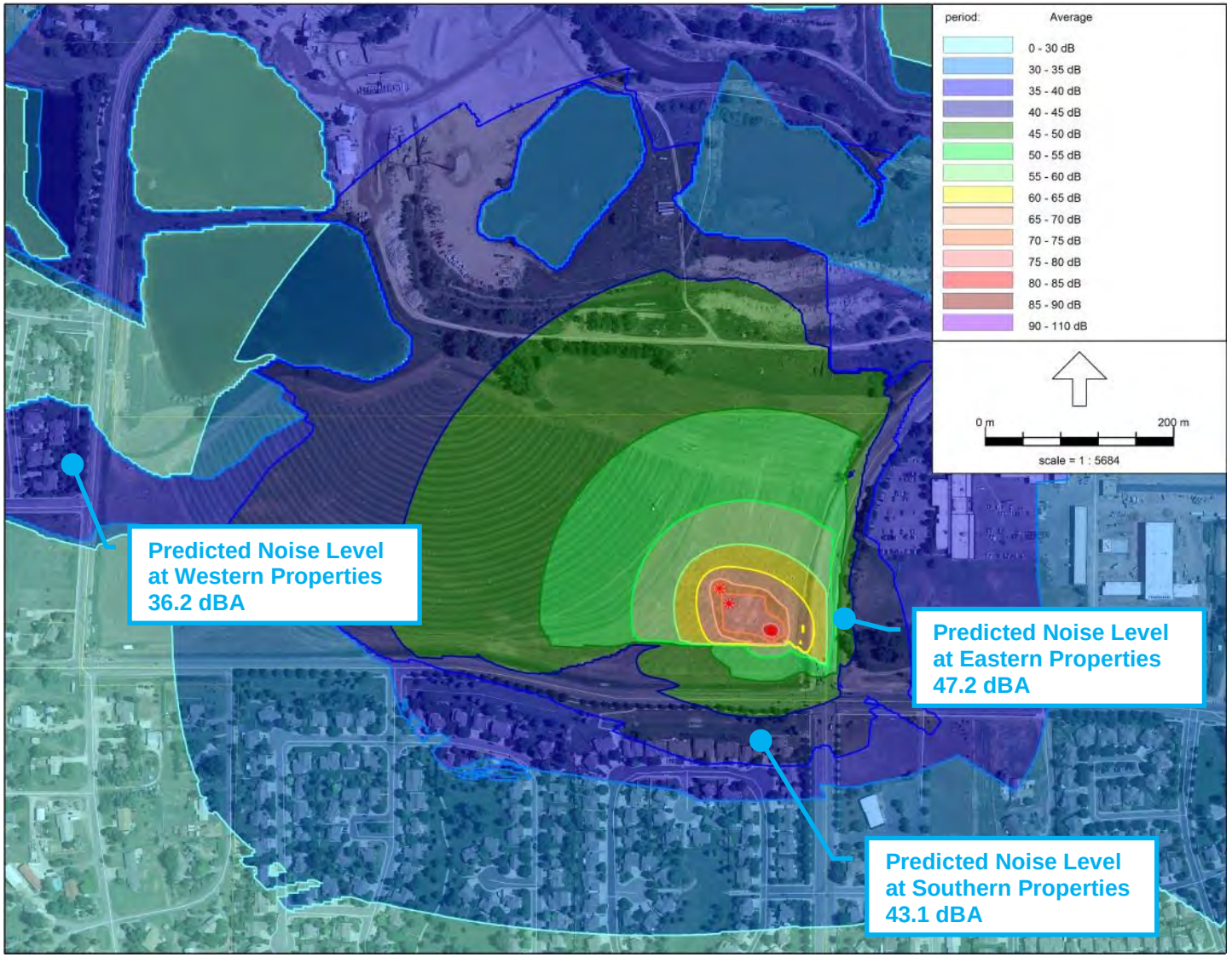



**Figure 26. Mitigated Mining Operation at Southern Location Noise Contour Map**

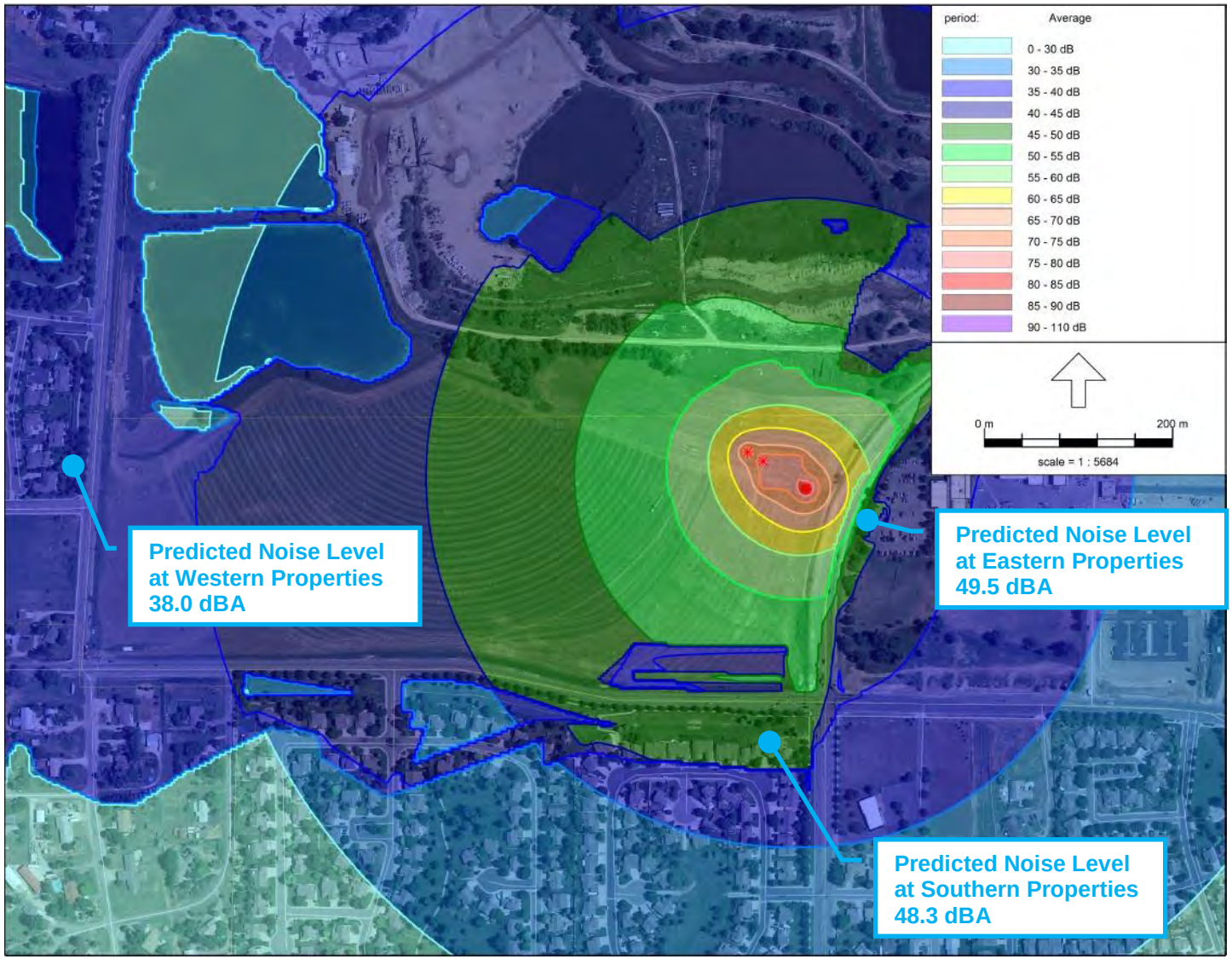



**Figure 26. Mitigated Mining Operation at Eastern Location Noise Contour Map**